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VIRUS DISEASES*

BY

G. M. FINDLAY, C.B.E., M.D., D.Sc.

Wellcome Bureau of Scientific Research, London

At the beginning of this century the term "virus disease" was hardly known: to-day a mass of knowledge has been acquired in regard to virus infections, even if, for the moment, it is impossible to give any precise definition of a virus. Man is the victim of at least thirty-five proved virus diseases, while the list of viruses affecting bacteria, plants, insects, fish, amphibia, birds, and mammals other than man runs into several hundreds. McKinney (1937) estimates that there exist nearly a hundred variants of tobacco mosaic virus, while those producing potato diseases are also very numerous.

Properties of Viruses

Despite the range of hosts affected, all viruses possess certain properties in common. Viruses were first recognized because they passed through porcelain filters which retained the majority of bacteria. By means of collodion filters, such as the gradocol membranes prepared by Elford (1929), in which the size of the pores is graded and uniform, it is now possible to estimate the size of infective virus particles with considerable accuracy. The size of these particles ranges from that of the smaller bacteria to something only a little larger than protein molecules.

The second characteristic property of the viruses is their failure to grow except in the presence of living cells. They appear, in fact, to be obligatory intracellular parasites. The organisms isolated by Barnard (1935), Laidlaw and Elford (1936), and Seiffert (1937) from sewage, earth, humus, and similar materials, and grown on simple media, in certain phases resemble virus particles, but are more closely related to the causal agents of pleuropneumonia and agalactia, and must be classed as bacteria among the Actinomycetaeeae (Ledingham, 1933). Many viruses are very resistant to chemical agents such as glycerol and to desiccation. A strain of yellow fever virus dried for seven and a half years was still highly pathogenic for rhesus monkeys. Viruses, both those affecting animals and those affecting plants, show considerable powers of variation. Such variations may occur spontaneously or may be brought to light by change in the environment (Findlay, 1936a). The appearance of new strains is of importance in the epidemiology of virus infections.

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The Nature of Viruses

Two theories are now current as to the nature of viruses: the first regards viruses as minute organized living entities, one generation being directly descended from the previous generation; the second regards viruses as autocatalytic substances which when introduced into susceptible cells alter their metabolism in such a way that the cells produce further amounts of the autocatalytic substance. The origin of the autocatalytic substance is uncertain, but it is thought to be due to some non-specific stimulus applied to the cell.

The first evidence that viruses are granular particles is usually credited to Paschen, who in 1906 described, in material from vaccinia and small-pox, corpuscles which he believed to be the causal agents of these diseases. Similar bodies had, however, been described in 1887 by Buist of Edinburgh. In addition to the animal-pox diseases, a number of virus infections are now known in which elementary bodies have been demonstrated of such dimensions as to be visible with the highest powers of the ordinary microscope. Among such virus infections affecting man are psittacosis, trachoma, inclusion conjunctivitis, molluscum contagiosum, lymphogranuloma inguinale (poradenitis venerea), varicella, zoster, herpes, and influenza, while Steinmaurer (1938), using fluorescence microscopy, claims to have demonstrated the elementary bodies of rubella and mumps. The aetiological significance of elementary bodies is based on the following findings: (1) Their demonstration in tissue lesions and exudates by staining methods, ultra-violet light, or fluorescence microscopy. (2) Production of the disease in susceptible animals by the injection of suspensions of elementary bodies. (3) Multiplication of elementary bodies outside the body by growth either in association with tissue cultures, in flasks containing serum, Tyrode's solution, and embryonic cells, or on the chorio-allantoic membrane of the developing chick embryo. (4) The infectivity of suspensions of elementary bodies can be neutralized by the serum of animals or men recovered from the disease; the elementary bodies may also be specifically agglutinated or may fix complement with immune serum. (5) The elementary bodies of psittacosis, lymphogranuloma inguinale, trachoma, inclusion conjunctivitis, and very probably variola and vaccinia, pass through a developmental cycle recalling that of certain

protozoa. The evidence that at least certain viruses are minute corpuscles is thus practically conclusive.

The autocatalytic theory of viruses, dating back to a suggestion put forward by Beijerinck (1898), received little attention till Stanley (1935, 1936) salted out from the tissues of tobacco and cucumber plants infected with tobacco mosaic virus fine needle-shaped rods which, though composed of chemically pure protein, were capable of inducing infection even after repeated redissolving and reprecipitation. There is doubt whether the rods are true crystals, but from tomatoes infected with the bushy stunt virus Bawden and Pirie (1938) have recently obtained twelve-sided protein crystals which continue to be infective even after repeated recrystallization. The virus proteins isolated from three strains of tobacco mosaic (Bawden and Pirie, 1937a), from two strains of cucumber mosaic virus (Bawden and Pirie, 1937b), and from tobacco ringspot and potatoes infected with X virus (Stanley and Wyckoff, 1937), whether appearing as true crystals or not, belong to the group of heavy proteins, and are almost certainly nucleoproteins. Eriksson-Quensel and Svedberg (1936) calculate the molecular weight of tobacco mosaic protein as between 15 and 20 million. Heavy proteins may, however, be isolated from both normal plant and animal tissues, but in plants infected with tobacco mosaic the amount of the heavy protein is very considerably increased. It was at first believed that the proteins acted merely as carriers of the virus, but as anything which denatures or destroys the proteins also destroys the infectivity of the virus, it is probable that virus activity is inherent in the protein. In birds and mammals no conclusive evidence has yet been obtained that viruses are heavy proteins and nothing more, although the viruses of equine encephalomyelitis and papilloma of rabbits are closely associated with heavy proteins. In silkworms, however, there exists a virus infection—polyhedral disease—in which, in addition to minute infective granules, large mono-refringent crystals appear in the blood and certain cells. An antiserum which agglutinates the infective granules also agglutinates the crystals even after repeated washing, suggesting that the crystals are very closely related to the virus granules (Gratia and Paillot, 1938).

The demonstration that paracrystalline or crystalline proteins can produce disease raises questions of great interest. It has been suggested that these virus nucleoproteins are themselves enzymes—proteases—but no enzyme is yet known to be a nucleoprotein, and the molecular weight of the virus proteins is considerably greater than that of the known enzymes. On the other hand, there is evidence to suggest that, at any rate in the case of the tobacco mosaic protein, the virus is a submicroscopical elongated structure composed largely or entirely of liquid crystalline nucleoprotein, these structures tending to become orientated by streaming or standing to produce the double refraction which is observed (Rawlins and Takahashi, 1938). The question has also arisen whether such virus proteins arise by "spontaneous generation" as a result of some error in cell metabolism: no conclusive evidence has been brought forward in favour of such a view (Dale, 1935; Laidlaw, 1938), nor with any profit is it possible to discuss whether virus proteins are living or dead. Life can only be defined as a summation of a number of activities, and of these activities virus proteins possess the powers of assimilation, reproduction, and variation. Similar activities are, it may be added, possessed by the genes (Gowen, 1937).

It is thus obvious that under the general term of virus are included agents varying in size, structure, and complexity: nevertheless all are capable of causing infectious diseases and have a life history of their own.

The Spread of Virus Infections

Virus infections may be spread either by direct contact, as in the case of infective warts and molluscum contagiosum, or during coitus, as in the case of lymphogranuloma inguinale and coital exanthema of cattle. Droplet infection plays a part in the spread of diseases such as influenza, the common cold, poliomyelitis, and measles, while inhalation of dried virus particles is also probable, especially in association with fomites. The role of contaminated clothes, especially furs, in the epidemiology of small-pox was recognized certainly as early as the sixteenth century. Dried faecal material from parrots and possibly fulmer petrels (Rasmussen, 1938) transmits the virus of psittacosis, as shown by the occurrence of the disease in persons who have never come in contact with parrots but have cleaned their cages. Infection with swine fever virus is carried by infected carcasses, while viruses may remain active in animal tissues used for other inoculations. A few years ago an outbreak of foot-and-mouth disease occurred in Detroit the origin of which was finally traced to vaccinia virus imported some years previously. Rabid animals transmit rabies by their bites, the species usually infected being dogs, hyenas, and meerkats; in Trinidad the vampire bat *Desmodus rotundus murinus* acts as a carrier of the virus without showing symptoms (Pawan, 1936). Many viruses are transmitted by the bites of insects (cf. Findlay, 1936b). Under natural conditions yellow fever and dengue are the most important diseases transmitted by aedine mosquitos, but laboratory and epidemiological evidence suggests that in the United States of America both the eastern and western strains of equine encephalomyelitis are also transmitted to man by the bites of aedine mosquitos (Eklund and Blumstein, 1938; Wesselhoeft *et al.*, 1938). The same insects very probably play a part in the spread of St. Louis encephalitis (Casey and Broun, 1938) and Japanese Type B encephalitis (Inada, 1937). In this country the only virus disease carried by an insect is louping-ill, a disease of sheep, which is transmitted by the tick *Ixodes ricinus*, L.; man is occasionally infected. A number of plant viruses are transmitted by insects such as aphides and thrips. The fact that the climate of Scotland is too cold to allow *Myzus persicus* to flourish is the explanation why Scottish seed potatoes are not infected to the same degree with viruses as those grown in England. In the case of plant viruses transmitted by insects there is as yet no conclusive evidence that the viruses multiply in the insect: in *Aëdes* sp. infected with yellow fever and equine encephalomyelitis multiplication of virus undoubtedly takes place.

Action of Viruses on Cells

Since viruses are obligatory intracellular parasites their action on the cells is especially noticeable. The cells affected by a particular virus are not, however, necessarily those present at the portal of entry of the virus. The portals of entry include the skin, mucous membranes, and placenta. Certain viruses, such as those of warts, molluscum contagiosum, herpes, and lymphocytic choriomeningitis, may enter through the lightly scarified skin. Other viruses, such as rabies and B virus, are introduced by the trauma caused by the bites of animals. All the viruses transmitted by biting insects also, of course, enter

by the skin. Mucous surfaces are readily permeable to viruses, even in the absence of trauma. The viruses which enter by these portals are: conjunctiva—trachoma, inclusion conjunctivitis, herpes, lymphocytic choriomeningitis; oral mucosa—dog and rabbit warts, mumps; nasopharyngeal mucosa—measles, acute coryza, variola, varicella, and the common cold (poliomyelitis appears to infect the olfactory nerve endings or to enter through traumatic wounds such as those caused by tonsillectomy and tooth extraction); respiratory mucosa—influenza, psittacosis, and laryngotracheitis of fowls; genital mucosa—warts, lymphogranuloma inguinale, herpes, and exanthema pustulosum coitale of cattle. Infection through the alimentary canal is uncommon. The viruses of polyhedral and wilt diseases of caterpillars, however, enter through the alimentary tract, as does swine fever virus. Unpublished observations show that rhesus monkeys can be infected with yellow fever by passing the virus direct into the stomach through a rubber catheter. Although by direct inoculation of virus into the lumen of the intestine it is possible to infect monkeys with poliomyelitis, it is generally believed that the acidity of the human gastric juice is sufficient to destroy the virus. Placental transmission to the embryo may occur in variola, varicella, Rift Valley fever, and rinderpest. A point of interest is that a virus pathogenic by one portal of entry may be relatively avirulent when injected by another. The fixed strain of rabies virus, for instance, is innocuous when injected subcutaneously, but fatal if injected intracerebrally.

When once viruses have entered the body they may infect the cells at the point of entry, as in warts and molluscum contagiosum, or may travel to particular cells for which they are highly pathogenic. The more usual paths of spread involve the blood stream, as in yellow fever; the lymphatics, as in lymphogranuloma inguinale; the nerve fibres, as in herpes, Borna disease of horses, poliomyelitis, and rabies. Certain viruses, such as those of warts and molluscum contagiosum, spread on skin or mucous surfaces by auto-inoculation.

The fact that rabies virus passes along peripheral nerves to the brain probably accounts for the lengthy incubation period of the disease, sometimes as long as eight months. Very long incubation periods have, however, been noted in other virus diseases. In man, for instance, the incubation period of infective warts may extend to eight months (Findlay, 1930). After experimental infection of animals with Borna disease the incubation period in the rabbit may be as much as 161 days, and in the guinea-pig 350 days (Nicolau and Galloway, 1928). Perdrau (1938) reports the onset of a fatal herpetic encephalitis in rabbits which were immunized six months previously with living virus, while in mice injected intracerebrally lymphogranuloma inguinale virus may not produce clinical symptoms for ninety-four days (Findlay, 1933). Scrapie, a virus disease of sheep, has recently been found to have an incubation period of at least sixteen months (Cuillé and Chelle, 1938). Neither the exact location of the virus during the latent period nor the cause of its sudden activity has yet been investigated. Very short incubation periods have also been noted in virus infections. The common cold appears to have an incubation period of forty-eight hours; while, in mice, Rift Valley fever virus may induce symptoms in thirty-six and death in forty-eight hours after intraperitoneal inoculation. Physiological conditions to some extent influence the length of the incubation period both in mammalian and in arthropod hosts. In the hedgehog infected with foot-and-mouth disease during hibernation the period may be considerably increased (Hulse and Edwards, 1937), while in the mosquito *Aëdes aegypti* infected with yellow fever the interval before it becomes able to transmit the virus by bite is dependent on the external temperature.

When a virus becomes active within a cell it produces one of two lesions: either the cells may be stimulated to divide so that the tissues become hyperplastic, or cell metabolism may be so severely damaged that rapid necrosis is inevitable. Instances of intense necrosis are to be found in the liver of man and animals infected with the viruses of yellow fever and Rift Valley fever or in the anterior horn cells of the cord in poliomyelitis. Instances of hyperplasia are the papillomata caused by infective warts of man and many animals, the skin nodules produced in birds by the fowl-pox viruses, and the fibromatous growth induced in rabbits by the filterable fibroma virus. In many hyperplastic conditions the primary hyperplasia is eventually followed by necrosis, but in certain cases the hyperplasia is indistinguishable from that of a true neoplasm. The Rous sarcoma of hens and the other filterable tumours of this species, as well as fowl leukaemia, simulate closely neoplastic formations in man, except that they can be produced by the injection of cell-free material. In frogs, also, malignant adenocarcinomata in the kidneys appear to be due to a virus (Lucké, 1938), while the filterable papillomata of rabbits may not infrequently undergo malignant changes: when, however, a malignant change has occurred it is no longer possible to obtain the virus from the tissues. It is obvious that although viruses may be one of the exciting causes of malignancy, their exact relation to the neoplastic change is still obscure.

Specific Action of Viruses

Many viruses exhibit considerable specificity in regard to the tissues in which they produce lesions. Thus warts affect only the skin and squamous mucous membranes; poliomyelitis attacks only nervous tissues, and is therefore said to be neurotropic; others, such as herpes and yellow fever, produce lesions in tissues derived from all three embryonic layers, and are said to be pantropic. The specificity displayed by many viruses, not only in regard to their hosts but also as to the particular tissues they parasitize, is in striking contrast to the ease with which the majority of viruses can be cultivated outside the body in association with embryonic cells, derived from animal species which ordinarily may be quite insusceptible. Since viruses grow within cells, it is pertinent to inquire whether specific cytological changes occur as a result of their growth. At an early stage in the study of virus diseases bodies distinct from the ordinary cell structures were observed in both the cytoplasm and nuclei of infected cells. Certain cytoplasmic bodies, such as those occurring in psittacosis, fowl-pox, vaccinia, and molluscum contagiosum, are now recognized as virus colonies, made up of masses of elementary bodies. The status of other cytoplasmic inclusions, such as the Negri bodies in rabies, is still uncertain, while no definite conclusions can yet be drawn as to the nature of the amorphous red-staining bodies formed within the nuclei in many virus infections. One view regards them as agglutinated masses of submicroscopical elementary bodies, but the fact that similar inclusions may be formed by the injection of chemicals such as lead suggests that they are more probably caused by flocculation of the nuclear colloids.

In association with the action of viruses on particular cells clinical symptoms develop, their severity depending partly on the rapidity of action of the viruses, partly on the number of cells invaded. Thus an infection with the virus of warts produces no clinical symptoms, but an

infection with the virus of yellow fever associated with necrotic changes in liver and kidney causes acute toxaemia. It should, however, be emphasized that the severity of all virus infections varies within wide limits and "inapparent" infections are extremely common. The importance of these subclinical cases in the epidemiology of virus diseases is very great.

Excretion of viruses from the body follows the rupture and breakdown of infected cells. In those diseases that are transmitted by biting insects the virus is, of course, picked up from the blood stream while the insects are feeding, but in the majority of infections the viruses are actually excreted from the body. Thus in variola and varicella the viruses are present in the skin lesions; in poliomyelitis, influenza, the common cold, and measles, in the secretions of the nasal and respiratory mucosa; in rabies, mumps, herpes, and virus B, in the saliva; in psittacosis, fowl pest, and possibly poliomyelitis, in the faeces; in lymphocytic choriomeningitis, in the urine of mice.

Immunity in Virus Infections

Virus diseases such as lymphogranuloma inguinale, which produces rectal stricture and elephantiasis of the vulva, run a chronic course; the majority are more acute, and end either in death or in the development of immunity. Immunity may be life-long, as in yellow fever, or of a few weeks' duration, as in herpes and the common cold. The mechanism of virus immunity is still in dispute. In most virus infections, virucidal immune bodies, agglutinins, and complement-fixing antibodies may be demonstrated, but in some diseases serum-immune bodies are either undemonstrable or are present only in very small amounts. Nevertheless a strong immunity exists. This immunity, it is thought, must reside actually in the tissue cells, since in many conditions immunity appears to be linked with the persistent presence of virus in the tissues. In birds that have recovered from psittacosis the virus is excreted in the faeces certainly for eighteen months (Berry and Rivers, 1935); the virus of poliomyelitis has been found in the nasopharynx of convalescents four months after an attack (Lucas and Osgood, 1913); and herpes virus may be present in the saliva and occasionally in the cerebrospinal fluid of apparently healthy individuals. Vaccinia virus has been obtained from the testicles of rabbits 114 days after inoculation into the skin (Olitsky and Long, 1929); lymphocytic choriomeningitis virus remains for 120 days in the brains of mice; and lymphogranuloma inguinale virus has been isolated from the genital tract for one and a half years (Caminopetros, 1935). Other records of virus carriers are swine fever ninety-four days, rinderpest 177 days, and laryngotracheitis of fowls 741 days (Gibbs, 1933). The vampire bat may carry rabies virus in its saliva for some months; while in infectious anaemia of horses the blood, after recovery from an acute attack, contains the virus certainly for fourteen years (Schalk and Roderick, 1923) and probably for life. Virus carriers obviously play an important part in the spread of infection. On the other hand, it must be confessed that in some diseases with a strong immunity attempts to demonstrate residual virus have so far failed. Further knowledge of the mechanism of immunity in virus diseases is essential, for in only two virus infections, lymphogranuloma inguinale and trachoma, is there evidence that specific drugs are of value: once viruses have entered cells they cannot be destroyed by the use of specific immune serum. Prophylactic immunization is therefore the best method of protecting against virus diseases, but so far the only infections against which methods of active immunization are available include variola, rabies, and yellow fever among human diseases; rinderpest, canine distemper, louping-ill, feline enteritis, and fowl-pox among animal diseases.

In this short summary it has obviously been impossible to touch on all the problems involved in virus diseases: the role of animals in transmitting infections to man; the encephalitis which may follow vaccinia, mumps, measles, varicella, rubella, or zoster; and the nature of virus variations.

It must be remembered that in addition to the known virus infections of man other diseases occur in which there is presumptive evidence that a virus may be the cause, such as rheumatism, infective hepatitis, epidemic myalgia, encephalitis lethargica, pemphigus, erythema multiforme, glandular fever, and aphthous stomatitis. In the elucidation of these conditions the general practitioner must play an important part, for he it is who alone sees these diseases in their early stages, when, if ever, viruses may be successfully isolated.

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The annual malaria control course for laymen (engineers, planters, etc.) will be held at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C., from June 26 to 30, under Sir Malcolm Watson and the staff of the Ross Institute. The course includes instruction on mosquitos and their habits, drainage, and other measures for the prevention of malaria. The course is free, and applications to attend should be sent in as early as possible to the organizing secretary at the Institute.

INTRA-UTERINE ASPIRATION

BY

BELA LORINCZ, M.D.

Gynaecologist, Hospital for Women, Ujpest, Hungary

AND

ALBERT DAVIS, M.D., Ch.M., F.R.C.S.

Honorary Assistant Gynaecologist, The French Hospital; Consultant Gynaecologist and Obstetrician, London County Council

It is obvious that direct histological examination of the endometrium is of the greatest value in the diagnosis of many gynaecological disorders, but until recently such examination has been largely negatived by the inconvenience and occasional dangers inseparable from the use of the ordinary curette. To obviate these difficulties we have recently evolved a method by which small fragments of the uterine mucosa may be removed from the unanaesthetized patient in the out-patient department or the consulting-room. The method is safe and painless, and in addition to the saving of time and disability it has the advantage of being applicable to those conditions where curettage is contraindicated by the presence of a raised temperature, active adnexal inflammation, or suspected ectopic gestation.

Technique

The apparatus consists of a cannula and a suction pump. The cannula (see illustration) is a rigid tube eight inches

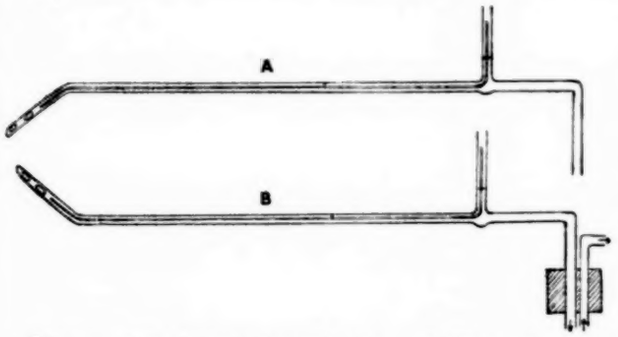


Diagram of the intra-uterine aspirator. A is for use in the retroverted uterus, B when it is anteverted. The aspirator contains a long fine glass tube for the admission of air, and is perforated at the uterine end by two small oval holes. The distal end passes into a bottle, which is itself evacuated by an electric suction pump.

in length, bent at 30 degrees at one end and at 90 degrees at the other. The former (uterine) end is closed, but it is perforated by two small holes measuring approximately 0.25 cm. in diameter. The other is open, and fits into the rubber stopper of a small receiving bottle. There is also a short tube attached at right angles to the main one; this is open to the air, and its purpose is to prevent the formation of a partial vacuum. Within the main tube is a much finer tube which admits air to the uterine end of the aspirator.

The difficulty caused by the varying positions of the uterus is met by the provision of two aspirators bent in opposite directions at the uterine end, one for anteversion and the other for retroversion. The diameter of the outer tube is equal to that of a No. 4 Hegar dilator, so that it may easily be passed into the multiparous uterus. In nulliparae, however, it may be necessary to dilate the cervix slightly before the instrument can be introduced.

The technique is simple. A speculum is placed in the vagina and the cervix seized with a single vulsellum. (It is unnecessary to use a special lithotomy table, and the left lateral position is usually the most satisfactory.) The vaginal cervix is carefully cleaned, and the sterilized aspirator introduced into the uterus. Gentle suction is then begun, either with a breast-pump motor or a large syringe, the aspirator being rotated continually so as to obtain tissue from several parts of the endometrium. If a glass instrument is used this tissue can be observed passing outwards along the internal tube, but if the instrument is a metal one the fragments are not seen until they drop into the formalin in the collecting bottle. The suction is continued until an amount of material adequate for microscopical examination is collected, when the cannula is gently withdrawn.

Indications

The use of the aspirator is indicated in suspected ectopic gestation, acute endometritis, tuberculosis of the endometrium, long-continued slight post-partum haemorrhage, and in the study of various endocrine disorders and their reaction to hormone therapy. In some of these conditions ordinary curettage is dangerous, and others do not warrant a surgical operation, however minor. Suction apparatus is free from both disadvantages, and though by no means always reliable the information it provides is often considerable, and occasionally of vital importance.

ECTOPIC GESTATION AND EARLY ABORTION

The differential diagnosis between ectopic gestation and early abortion with an inflammatory tubo-ovarian mass is often notoriously difficult, and it is here that aspiration may be helpful. The following cases are illustrative of its value.

Case 1.—A woman aged 39 was admitted to hospital with severe colicky pain in the hypogastrium and a history of having missed one period. Six weeks after the last period she started to bleed, and the haemorrhage had persisted since that time (one month before admission). She had previously had two full-term normal deliveries and one abortion, and had been treated medically in 1927 for a large tubo-ovarian abscess. Pelvic examination revealed a large fluctuating tumour on the right side, bulging the posterior fornix, and a provisional diagnosis was made of septic abortion with recurrence of the old abscess. The clear serum obtained by puncture of the pouch of Douglas was of little diagnostic value and in view of the history a uterine aspiration was performed. Microscopical examination of the aspirated tissue showed definite decidual changes in the endometrium with no foetal elements, and this, in spite of some contrary points in the history and clinical signs, was sufficient indication for operation. Prompt laparotomy revealed an intact right-sided tubal pregnancy of from three to four months' duration. This was easily removed, and the patient made an uninterrupted recovery.

Case 2.—This patient, aged 33, was admitted to hospital complaining of vaginal haemorrhage, with fainting attacks, vomiting, and severe colicky pain in the lower abdomen. The last menstrual period was six weeks previously. She had had three normal full-term deliveries, the last of which had been followed by a pelvic peritonitis of six months' duration. Since that time the periods had been irregular, with a six to eight weeks interval. The patient was not otherwise ill; the colour was good, and temperature and pulse were normal. Pelvic examination revealed a normal anteverted uterus and a sausage-like tumour attached to the left cornu. Microscopical examination of the endometrial tissue obtained by aspiration showed definite decidual changes with no foetal elements, and a diagnosis of ectopic gestation was made, in

spite of the equivocal nature of the history and the menstrual anomalies. This was confirmed by immediate laparotomy, the left tube containing an intact growing ovum covered with chorionic tissue. A few drops of fresh blood were present among the intestines, and blood was also seen oozing through the fimbriated extremity.

In both of these cases the uterine aspirator proved an invaluable diagnostic adjunct. But the method is of course by no means infallible, and its incompleteness renders it particularly prone to error. It is possible, for example, for the aspirator to fail to evacuate foetal elements even when these are present in the uterus, and this happened in one of our cases.

Case 3.—The patient, aged 31, was admitted to hospital with vaginal haemorrhage and severe pain in the right lower abdomen. The last menstruation was eight weeks overdue, the periodicity being regularly 4/28, and she had been losing slightly but continuously for ten days. On examination there was some pallor, with temperature 99° and pulse 96. The uterus was soft and bulky, and a very tender indefinite mass, the size of a plum, was present in the right pelvis. The lower abdomen was generally tender and hyperaesthetic, but there was no evidence of peritonitis or of free fluid. The uterine aspirator showed endometrial decidual changes and no foetal elements, and a diagnosis of extra-uterine pregnancy was made. At operation, however, this was found to be incorrect, the condition being a subacute tubo-ovarian abscess.

The menstrual symptoms and the uterine changes in this case were evidently the result of an incomplete abortion, for subsequent curettage demonstrated the presence of small but definite foetal elements. Too much reliance on the aspirator was responsible for a probably unnecessary laparotomy, for though cure resulted from the removal of the abscess and subsequent curettage, the latter was delayed and the former might have been as adequately dealt with by medical treatment.

CASES OTHER THAN PREGNANCY

In addition there is the possibility of error due to the fact that certain conditions other than pregnancy may produce pseudo-decidual changes in the endometrium. Whitehouse has repeatedly demonstrated such "menstrual decidua" in dysmenorrhoea, and it also occurs frequently in the presence of corpus luteum cysts and occasionally in normal menstruation. It is true that these changes are not identical with those occurring during the later stages of pregnancy decidua formation—the individual cells, for example, are much smaller—but in the earliest period the two are often indistinguishable. The following case is illustrative of this.

Case 4.—A woman aged 33 was admitted to hospital with severe pain in the right lower abdomen of one week's duration, accompanied by slight vaginal haemorrhage and attacks of faintness. The last period was ten days overdue. She had had four normal deliveries, but developed puerperal sepsis on each occasion. The normal menstrual periodicity was 7/28. Pelvic examination revealed a soft cystic mass, the size of a tangerine orange, on the right side. The uterus was normal in size, but there was a slight trickle of blood issuing from the os. Uterine aspiration showed a decidually modified endometrium without foetal elements, confirming the clinical diagnosis of ectopic gestation. At operation, however, the tumour was found to be an ovarian cyst.

Two possibilities may be suggested in explanation of this mistake: (*a*) that the cyst contained a large quantity of corpus luteum hormone, and (*b*) that there had been a complete abortion. The former was probably the condition present in this case, for the history and physical signs were against the latter, while the fact that the haemorrhage ceased after removal of the cyst would indicate some causal relationship. The mistake was not, of course, a serious one, except for the disadvantages of an emergency operation, but it does illustrate a possibility of error inherent in the aspiration method.

The opposite state of affairs—that is, the prevention of operation—is, however, well shown by the following case.

Case 5.—A woman aged 23 was admitted to hospital with slight vaginal haemorrhage, raised temperature, and severe lower abdominal pain. The last period was one week overdue, and haemorrhage had begun a day before admission. Pelvic examination showed a soft very tender sausage-shaped tumour on the right side; the uterus was of normal size. A diagnosis of tubal pregnancy was made, but uterine aspiration revealed the presence of acute purulent endometritis. Medical measures were consequently adopted, and after treatment by rest and local applications the patient made an uninterrupted recovery, the tubo-ovarian abscess disappearing spontaneously in a very short time.

It is apparent that the function of the aspirator is primarily accessory, its value being principally that of a diagnostic aid, either positive or negative. Occasionally, however, it may reveal the presence of a previously unsuspected lesion in the endometrium.

Case 6.—A multipara aged 43 had a history of irregular haemorrhage, frequent temperature up to 100° F., and loss of weight. Pelvic examination showed a soft tender left adnexal tumour. The condition appeared almost certainly an inflammatory one, but it was necessary to eliminate the possibility of malignancy. Curettage was contraindicated, and aspiration was substituted. The material thus removed proved to be typical of tuberculous endometritis.

This case is particularly instructive in view of the equivocal nature of the symptoms of genital tuberculosis and the notorious difficulty in its clinical diagnosis. It is probable that the aspirator will prove of considerable value in suspect cases, and we have in fact recently seen two cases of phthisis where endometrial aspiration showed marked tuberculous changes, although there were no clinical symptoms whatever of uterine involvement.

REGULATION OF HORMONE THERAPY

Another and more considerable field for uterine aspiration is in the regulation of endocrine substitution therapy. The best means of observing the effect of ovarian hormone administration on the endometrium would of course be by repeated curettage, but this is obviously an undesirable and in most cases an impossible procedure. Repeated aspiration is a satisfactory substitute, and the information gained in this way is of paramount value in assessing the results of treatment. In some cases of amenorrhoea it may be difficult at first to obtain any endometrium at all by suction, but with persistence sufficient for microscopical examination can usually be withdrawn. On the other hand, the amount of mucosa which enters the suction tube after treatment with gonadotropic hormones is sometimes astonishing.

When building up the endometrium in a case of amenorrhoea it is desirable to have some idea of the patient's ovarian cycle, so that the appropriate hormone may be given at the correct time. Though there is no haemorrhagic evidence that these patients *do* pass through any cycle at all, it is clinically obvious that such is actually the case. Many patients, for example, the subjects of amenorrhoea, complain that they periodically feel the same subjective symptoms as in menstruation, although no bleeding occurs. Another example is the manner in which menopausal symptoms may be completely relieved by doses of oestrin insufficient to produce any cyclic haemorrhage. This clinical evidence has been supple-

mented by the results of aspiration, which have shown that not only can cyclic changes in the endometrium occur in amenorrhoea, but that the histological changes of the normal endometrial cycle can be provoked by hormone therapy without causing the ultimate manifestation of haemorrhage. The cause of this is obscure: either a specific agent for haemorrhage is absent or it is not present in sufficient quantity, or the various hormones involved are secreted asynchronously. However that may be, the one external manifestation of menstruation—that is, haemorrhage—is absent, and it is here that aspiration is of value in determining both the timing of the cycle and the appropriate therapeutic technique necessary for its stimulation.

STERILITY

In cases of sterility the information derived from aspiration is of value in both diagnosis and treatment: it is particularly important in determining the presence of anovular menstruation, which has been shown to be a frequent cause of the condition. The diagnosis is made by examining the endometrium just before menstruation; if the normal premenstrual changes are not present it is evident that the factor which produces them—that is, the corpus luteum—is either absent or deficient. This phenomenon of anovular menstruation is also the basis of many cases of post-menopausal cyclic haemorrhage, and here, as in sterility, a diagnostic aspiration will often elucidate the true nature of the haemorrhage and provide the index for its hormonal treatment.

Conclusions

Uterine aspiration is a simple, harmless, and effective substitute for diagnostic curettage. It may be performed in the consulting-room, requires no anaesthesia, and avoids the necessity for confinement to bed.

The method is of value in the differential diagnosis of many varied conditions, including ectopic gestation, incomplete abortion, late post-partum haemorrhage, sterility, acute endometritis, etc. It is not, however, infallible, and its findings should always be correlated with the clinical signs and symptoms. Where carcinoma is suspected, curettage should be substituted.

It is probable that the main value of aspiration lies in the diagnosis of various disorders of endocrinal origin and in the control of their treatment by hormone therapy.

The fifteenth annual report of the Ella Sachs Plotz Foundation for the advancement of scientific investigation reveals that special favour is being shown to investigators who are working in the sciences bearing on medicine and surgery without reference to other fields. Thus Dr. H. Blaschko of Cambridge is continuing, with the aid of a grant, his study of the sympathomimetic drugs and the metabolism of amines, while Dr. A. Colin Campbell of Edinburgh has been tackling various problems connected with the cerebral circulation. Professor F. Bremer of Brussels has studied the acoustic responses of the cortex, and Dr. P. Ellinger of London the physiology of the kidney with special reference to the fate of phlorhidzine derivatives. Dr. I. J. Kligler in Jerusalem has been investigating the nature of the virus causing sand-fly fever. The effects of sexual hormones and of gonadectomy on other organs are being defined by Dr. V. Korenchevsky of the Lister Institute, London, and a simple hydrocarbon with a strong oestrogenic action has been isolated and investigated by Dr. A. Schönberg of Edinburgh. Applications for research grants for the year 1939–40 must reach Dr. J. C. Aub, Collis P. Huntington Memorial Hospital, Boston, Masschusetts, by the end of March. Letters asking for aid must state definitely the qualifications of the investigator, the nature of the proposed research, the size of the grant requested, and the specific use of the money to be spent.

DIRECT INGUINAL HERNIA

BY

W. G. GILL, M.A., M.B., F.R.C.S.

Surgical Registrar and Resident Surgical Officer, Guy's Hospital

The purpose of this paper is to draw attention to a type of direct hernia which is occasionally seen and which receives no attention in the standard textbooks. The only description that I have come across is by Ogilvie (1937), who says:

"While any classification of types of direct hernia is unnecessary, it is advisable to point out that a rare variety, unmentioned in textbooks, is occasionally encountered in which the posterior wall of the inguinal canal medial to the deep epigastric artery shows a small circular deficiency with firm, almost tendinous margins, through which a tubular process of peritoneum, indistinguishable on clinical examination from an indirect hernia, escapes and often emerges through the external ring. Whether such a hernia is of congenital origin, due to some trauma, or caused by a localized extraperitoneal lipoma which weakens the fibrous sheet at one spot, is undetermined."

Before reading this article I had observed independently such a hernia in a young man, and I was stimulated to keep a careful watch for others. I was rewarded, for later I had the good fortune to operate on a patient in whom not only was this type of hernia present but it had actually strangulated, producing a Richter's hernia. In a personal series of eighty herniae there have been three of this type,* and their case histories follow.

Case Reports

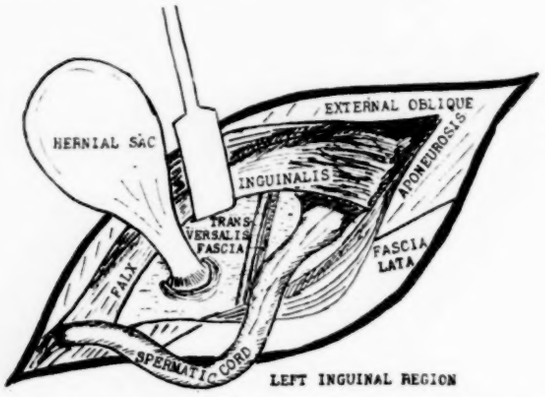
Case 1.—A man aged 26 was admitted in September, 1936, having had a hernia for four months. Clinically he had an indirect inguinal hernia. At operation no sac was found under the coverings of the cord; instead, there was a sac medial to the deep epigastric artery, protruding through a small circular hole in the transversalis fascia. This hole would only admit the tip of the index finger, and had a well-defined fibrous edge. The sac was about three inches long, and part of its medial wall was formed by bladder. The peritoneum stripped with ease from the bladder, and was transfixed and ligatured after returning the bladder to the abdomen. The deficiency in the transversalis fascia was closed with catgut and the inguinal canal repaired behind the cord with strips of external oblique aponeurosis. Recovery was uninterrupted.

Case 2.—A man aged 59 was admitted in March, 1937, with a strangulated hernia of six hours' duration. He had had a hernia for some time previously, and on clinical grounds seemed to have a small strangulated indirect inguinal hernia. Immediate operation was performed, and on opening the inguinal canal a sac was seen appearing above the cord from the posterior wall of the inguinal canal. It was recognized that the condition was the same as that in Case 1, and, indeed, the appearances were exactly similar, except that bladder did not form part of the sac wall. The sac contained a small knuckle of half the circumference of the ileum, being a Richter's hernia, and since it was viable the gut was returned to the abdomen. A small opening was present in the transversalis fascia, and after removing the sac this was repaired with catgut. No repair of the inguinal canal was made. Uninterrupted recovery followed.

Case 3.—A man aged 40 was admitted in September, 1938. His history was interesting. Fifteen years ago he was operated on for a left indirect inguinal hernia. There was no recurrence. Two years ago a right inguinal hernia was operated on at another hospital, and this recurred within six months. On admission he had what appeared to be a recurrent

* Since writing this article I have operated on a female with a hernia exactly similar to those described here.

indirect inguinal hernia. At operation the condition conformed in every way to that in Case 1, and it was treated in the same manner, except that silk was used to repair the hole in the transversalis fascia, and a silk darning repair made of the inguinal canal. His recovery was uninterrupted.



A diagrammatic drawing of the condition described. No attempt has been made to illustrate the bladder that forms part of the medial wall of the sac. The epigastric vessels are exaggerated in size and clarity in order to point out their relation to the sac.

Discussion

The facts that emerge from a study of these cases are important, and raise points of interest with regard to their anatomy, the type of sac, and their treatment.

In the common type of direct hernia nothing more is usually found than a diffuse bulge of the posterior wall of the inguinal canal, often emerging through the external ring, but possessing no definite peritoneal sac and rarely if ever strangulating. The aetiology is usually quite clear, and represents a weakness of the muscles in that region, often due to advancing age, and occasionally secondary to bowel or urinary obstruction. In the rare type described here the inguinal canal is normal in all respects except for a localized opening in the transversalis fascia with quite definite edges, and in the cases reported would not admit more than the tip of the index finger. As Ogilvie points out, the aetiology of this condition is not clear, and from a study of so few cases it is impossible even to hazard a guess, but it seems certain that the peritoneal sac has arisen secondarily to the hole in the transversalis fascia. In two cases bladder formed a considerable part of the sac, and in one case actual strangulation had occurred. In all cases a definite tubular peritoneal sac was found which had to be dissected from its surroundings and ligatured as in an indirect hernia. Furthermore, they were all diagnosed as indirect herniae before operation; and, indeed, they are indistinguishable.

With regard to treatment, it is important to recognize this type of hernia, which can only be done at operation. The significance of this is borne out by Case 3, for it is possible that the true state of affairs was not recognized at the original operation, and that the diagnosed indirect hernia was really the direct one found at the second operation.

The bladder often forms a part of the sac and must, if possible, be stripped off from it. More important, though, is the repair. It is apparent that, whatever type of repair is done on the inguinal canal, unless a direct attack is made on the opening in the transversalis fascia recurrence is apt to occur. In my own particular cases the opening was closed with catgut in two, and silk in the third. In the case which was strangulated no repair of the inguinal canal was made, but a full repair was effected in the other two, using silk in one and strips of external oblique aponeurosis in the other. None has recurred.

My thanks are due to Mr. Lancelot Bromley for permission to publish the notes of Cases 1 and 2. Case 3 was admitted under Mr. W. H. Ogilvie, and I am also indebted to him for suggesting the publication of this article and for his help and criticism.

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THE TRANSMISSION OF SYPHILIS BY BLOOD TRANSFUSION

BY

J. A. W. McCLUSKIE, M.B., Ch.B., F.R.F.P.S.

Lecturer in Venereal Diseases, Glasgow University; Physician, Out-patient Dept. V.D., Western Infirmary; Physician, Glasgow Women's Hospital

In view of the rapidly increasing frequency of blood transfusion as a therapeutic measure in a widening variety of conditions, a recent experience has convinced me that it would not be untimely to draw attention to the attendant risk of transmission of syphilis by blood transfusion, even when all ordinary precautions such as clinical and serological investigation of the donor have been scrupulously carried out.

Historical Survey

The view that syphilis is transmissible by blood transfusion has long been accepted, chiefly on the basis of animal experiments. A review of the literature also indicates that well-authenticated examples of transmission in man have been fairly frequently recorded, there being some seventy cases since the first description by Fordyce in 1915. It is curious, however, that no cases have been hitherto reported in Britain. Several analyses of cases of syphilis following transfusion of blood by American and Continental workers (Morgan, 1935; Klauder and Butterworth, 1937; and others) show that almost all the infections occurred when the donors were in the primary or secondary stage of the disease. Indeed, McNamara (1925), from his own experience, goes so far as to state that infection during the tertiary stages does not occur even though the Wassermann reaction of the blood is positive.

From these observations one would conclude that with ordinary precautions in the way of clinical and serological examination of the donors the risk of infection could easily be avoided. Unfortunately this is not so: undoubted infection has been recorded with blood from donors who were in the pre-chancre stage, and to this fact I wish particularly to draw attention. An analysis of available published histories reveals that in at least two instances infection was transmitted from donors in the incubation stage before the primary sore had appeared, and I now add a third case in which the facts are established beyond dispute. There have been several others in which the history was suggestive but the evidence was incomplete (Brem, 1923; Levy and Ginsburg, 1927; Feldman, 1928; and Dufour, 1929).

Cases of Transfusion Syphilis

The following are the fully authenticated cases:

CASE 1 (POST AND COONEY, 1933)

A girl aged 14 was admitted to hospital with a grave septicaemia arising from a furuncle on the lip. Blood culture

yielded a pure growth of *Staphylococcus albus*. She was transfused with 500 c.cm. of blood from her brother. She made a good recovery from the septicaemia, but four months later was readmitted to hospital with acute generalized secondary syphilis. The Wassermann reaction was positive, but there was no sign of a primary lesion, and the hymen was intact. The donor was then investigated, and it was found that a penile chancre had appeared four to five days after he had given the blood for transfusion. He had since received antisyphilitic treatment. It is of interest to note that the recipient's blood was negative to the Wassermann test on two occasions shortly after the transfusion.

CASE II (PAUTRIER, 1936)

This patient, who showed a typical secondary rash, denied exposure to infection, and careful examination revealed no sign of a primary lesion. It was learned that he had been treated some months before by blood transfusions for severe anaemia. The donor was a student of medicine, one of a team of donors, who had been under strict serological control and reacted negatively to all the usual tests. One week after the last transfusion and ten days after the last blood test a sore appeared on the tip of his tongue in which *Treponema pallidum* was found. The various serological reactions at this stage were negative and, since treatment was instituted immediately diagnosis was made, they remained so.

CASE III (MY CASE)

A married woman aged 25 was admitted to the maternity wards on June 16, 1937. She had old-standing tuberculous disease of the right hip-joint which, though healed, had left the thigh so adducted that spontaneous delivery was impossible. Labour began on June 19, and Caesarean section was performed. The baby was healthy. The Wassermann reaction of the mother's blood, which was tested as a routine on June 23, was negative, and she showed no clinical signs of syphilis. She developed a low-grade septicaemia with a severe anaemia, and for this reason was transfused with 800 c.cm. of her brother's blood on July 2. Clinical examination of the donor on this date showed no evidence of disease, and his blood gave a negative Wassermann reaction. The patient's blood was also tested again at this time and was negative. She was discharged well on July 24.

On July 13 the donor attended the outdoor clinic for venereal diseases. He gave a history of exposure to infection five to six weeks previously, and had several very small sores round the coronal sulcus, which he said had been present for four to five days. The edges of the sores were raised, the bases granular, and numerous *Tr. pallidum* were found in the exudate. At that time the inguinal glands were slightly shotty, particularly on the left side, but there was no other sign of the infection. The Wassermann reaction on that date was "doubtful." At this time, also, he had definite though slight jaundice. Unfortunately not until the beginning of September did he volunteer any statement as to his having acted as a blood donor, and valuable time was thus lost. The sister who received the blood was immediately sent for (September 11). She stated that shortly after dismissal from hospital she had developed fairly severe jaundice, which lasted for about a month. There was now no evidence of jaundice, and the urine was free from bile. She had, however, a few scaly coppery spots on the arms and a very slight general adenitis. No sign of a primary lesion was present anywhere. The Wassermann reaction of the blood was strongly positive; treatment was therefore begun at once. In view of her history of jaundice, arsenical treatment was given carefully. She had 3.6 grammes of neosalvarsan and 2 grammes of bismuth metal in three months. The Wassermann reaction of the blood was then negative. Another course of 4 grammes of neosalvarsan was given without any untoward reaction, and the Wassermann reaction has remained negative ever since, under very moderate treatment.

The donor, who still had some signs of jaundice when his treatment was begun, became very yellow and there was definite hepatitis. Campolon injections were given, and after four weeks he had recovered. From July 13 till September 2 he had had only 0.9 gramme of neosalvarsan, yet the Wassermann reaction of the blood was negative. He then received a fairly full course of treatment—5 grammes of neosalvarsan in three months—and thereafter the Wassermann reaction was returned as doubtful. He has been treated intermittently since and is now well, with a negative Wassermann reaction in the blood.

Case III presents several interesting features: (1) The disease in the patient had not declared itself two months after transfusion, unless the few reddish macules on the arm were early secondary manifestations—syphilis d'emblée. (2) In both the donor and the recipient the disease responded to relatively small doses of arsenic and bismuth. (3) The Wassermann reactions of the donor and the patient were both tested at the time of the transfusion and were negative; and neither presented any sign of the disease. (4) The donor developed jaundice very shortly after giving the blood, and the recipient two weeks after transfusion.

Discussion

From the three foregoing cases it is clear that syphilis can be transmitted from donors who are clinically and serologically negative. It is therefore of great importance that this fact should be explained to prospective donors, so that, by careful questioning, one may be able to rule out those who have been exposed to infection during the preceding two months. In this country, where most of the donors are volunteers, it is unlikely that any would wilfully risk the possibility of passing on the disease.

It has been suggested that the greatest safeguard against such accidental transmission of syphilis would be to employ cadaver blood obtained according to the technique of Yudin (1936). Blood is taken only from cases where full post-mortem examination and the history and negative serological reactions have all united to exclude the presence of the disease. Apart from the natural prejudice which the general public in this country might have to the practice, it would only be possible when conducted on a large scale with considerable laboratory facilities.

It may in the future be practicable to add some innocuous antiseptic—for example, acriflavine—to the blood for a sufficient period before transfusion to ensure sterility. In some emergency cases in which there has been a doubt as to the possibility of latent syphilis in the donor I have added a small dose of neosalvarsan (0.45 gramme) to the transfused blood with no untoward effect. These measures were purely empirical, and I have no proof of their efficacy.

It should be remembered that in addition to the risk to the patient there is the possibility of an action for damages against the doctor who transmits syphilis by transfusion. Several legal actions of this kind have already taken place in America, and Stokes (1938) has said in a discussion on the subject that "the damage suit is a great educator." We must endeavour to avoid that form of education.

Summary

No case of "transfusion syphilis" has been traced in the literature of this country, though many have been reported by American and Continental writers.

In most of the reported cases the donors were in the primary or secondary stage of syphilis.

Two cases have been recorded, to which I have added a third, of the transmission of syphilis from a donor in the earliest or pre-chancre stage, when the clinical and serological examination was entirely negative.

The importance of this possibility is emphasized not only for the patient but also for the doctor.

The risk of syphilis transmission by blood transfusion could be minimized by the use of cadaver blood or by the discovery of some means of rapidly destroying spirochaetes in the blood withdrawn from the donor. The former method seems unlikely to be adopted in this country: the latter appears to offer an important problem for research.

I am indebted to Dr. A. S. M. Macgregor, medical officer of health to the City of Glasgow, for access to the hospital notes of Case III.

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A SUGGESTED SKIN PROTECTIVE

BY

P. B. MUMFORD, M.D., F.R.C.P.

Honorary Dermatologist, Manchester Royal Infirmary; Honorary Assistant Physician, Manchester and Salford Skin Hospital; Honorary Consulting Dermatologist, Christie Cancer and Holt Radium Institute

The following suggestions are the outcome of further investigations on the use of emulsifying bases in dermatology. I have described elsewhere (Mumford, 1938) how a paraffin base mixed with a balanced proportion of stable fatty alcohols and acid esters of alcohols will form a neutral stable vehicle for the application of medicament to the human skin. Such vehicle emulsifies on the addition of water or watery solutions, and indeed will appear to utilize the serous discharge from an inflamed area of skin rather than find this a barrier to the transference of its chemical content. Ointments of this nature are easily removed from clothing and bed linen. Finally, unlike the recognized emulsifying agents, they have little or no dehydrating or degreasing action on the skin, an action which may, *per se*, induce secondary inflammatory reaction.

One of industry's minor problems is that a very large number of widely different substances exercise an irritating effect on certain individuals; therefore any preparation that reduces the incidence of occupational dermatitis is worth careful consideration. In theory and practice alike, certain modifications of Halden's emulsifying bases (HEB)—the bases referred to above—would appear to fulfil the major needs of a protective substance without possessing the disadvantages connected with a number of preparations employed in industry to-day.

Types of Skin Protective

Protectives in use may be conveniently classified into four groups: (1) Fats and oils—for example, petroleum jelly, lanolin, wax, etc. (2) Jellies containing colloid—for example, starch, tragacanth, agar, glycerin, honey. (3) Emulsions containing mixtures of substances in Groups 1 and 2. (4) Soap bases—for example, stearates, oleates, and palmitates of alkalis: *free alkali usually present.* Triethanolamine salts may be added as emulsifying agents, but they are really modified soaps. Antiseptics, essential oils, and inert substances are usually added to improve texture and appearance.

It is clear that many widely different preparations are available to protect the human skin, and it would appear that as a natural corollary no single preparation could be universally applied to assist the divergent types of chemical and physical irritants for which it might be required. A few disadvantages of the above protectives may be mentioned.

Disadvantages of the Protectives in Use

The preparations in Group 1 cannot be saponified or *easily emulsified* after use, and therefore strong detergent cleansing measures must be adopted at the end of a period of exposure. Such detergents may of themselves be irritant, and indeed I have often stressed the fact that the cause of much occupational dermatitis lies in the cleansing methods used by the employee rather than the substances he or she handles during the course of work. Simple examples of this, recognized by every medical man, are the use of scrubbing-brushes to remove ingrained particles of carbon and dirty oil and the use of alkaline hypochlorite (chemic) to remove dye. Strong detergents frequently saponify the natural oils of the skin, only to produce in that way a true chemical dermatitis. Their application also often entails definite local trauma.

Fats and oils are unsuitable for use on the human skin in many branches of industry because they are transferred to delicate fabrics and paper, thereby soiling the material handled. This applies, for example, to paper workers, printers, and silk manufacturers. The jellies (Group 2) are not likely to exercise any chemical or physical protective action other than that of a barrier. They are not adherent, they are easily soluble in water, and they are highly absorptive. Glycerin tends to have a dehydrating effect.

Emulsions (Group 3) represent a nearer approach to efficiency, and have a varying protective effect. They are more easily and evenly applied, but tend to leave a fatty barrier on the skin, with the consequent disadvantages already mentioned. They are, moreover, easily destroyed by natural phenomena such as evaporation, which alters the balance of ingredients—for example, a dye may be removed from a solution in which it has been previously dissolved. An emulsion will often be found unstable after application to the skin for even a short period, because of its having dried out. Re-emulsification is impossible or difficult, and the cleansing process at the end of the period of work entails the use of a detergent, with its consequent disadvantages.

The soap protectives (Group 4) in wide use to-day may in themselves be irritating because of their hydrolysable alkali content and the *presence of free alkali.* Any agent which precipitates a fatty acid—for example, hydrochloric acid and boric acid—induces a secondary precipitate which may cause inflammatory reaction. Hard water will produce insoluble calcium salts and interfere mechanically with certain manufacturing processes.

The Ideal Protective Agent

The ideal protective agent must thus be of a certain chemical and physical nature and possess characteristics not fulfilled by any of the known products available to-day. In brief, it must (*a*) be easily *spread*; (*b*) remain stable in the presence of most other chemical agents; (*c*) provide an oil film of low surface tension; (*d*) be not hygroscopic (be dehydrating); (*e*) be non-transferable; (*f*) be without capacity to "cut"—that is, break up and

allow penetration of chemicals through itself; (*g*) be able to prevent heat-insulating effects by providing low-surface tension and a capacity to mix with water; (*h*) if possible be to some slight extent absorbed into the skin, and *must* certainly fill the hair follicles with inert but easily removed substance; (*i*) should be easy to remove without the use of scrubbing-brushes or a detergent *other than good soap*. The HEB as originally supplied appeared to possess many of the above characteristics, but its use was contraindicated because of its "stiff" nature; there was thus difficulty in producing a rapid and even spread over a workman's arms and hands.

HEB protective (normal), as now produced, is a thin, pleasant, adherent cream which can be rapidly and easily massaged into the skin, and is not transferable to paper or fabrics. The film, *a true emulsion*, readily spreads over the skin surface, and, penetrating into the follicles, holds up within itself the smallest particles. On reapplication of water, *or good soap* and water, an immediate re-emulsion is produced which throws back such particles without difficulty. A simple experiment to demonstrate this can be carried out as follows. The back of one hand is massaged with HEB protective until apparently normal in appearance. The backs of both hands are then rubbed heavily with colloidal carbon particles. The most thorough washing of the hands follows. The unprotected hand shows an adhering film of black matter. Even after the use of soaps, pumice-stone, and scrubbing-brushes, moderate magnification shows the particles of carbon firmly lodged within the mouths of the hair follicles.

Non-transferability is demonstrated by handling white paper immediately after massage of the fingers with HEB protective. In order to meet the need for protection against wet irritant media a modification of "HEB protective (normal)" had to be made, *introducing lanolin, which leaves a film* that will resist water but easily re-emulsify. Such modification lay in the alteration of relative proportions of wax and fat so as to leave a film of the latter to resist aqueous solutions by its high surface tension. It has been termed "HEB protective (waterproof)," and acts by the addition of high surface tension to the phenomenon of barrier production as possessed primarily by "HEB protective (normal)." The constitution of these two preparations is as follows:

Normal.—Higher fatty alcohols (palmityl and stearyl); acid esters of these higher fatty alcohols; liquid paraffin; paraffin wax; water; perfume.

Waterproof.—As above, with lanolin replacing the paraffin wax.

It is too early to claim much for these preparations, since they have not yet received an extensive trial under working conditions involving the factors of prolonged perspiration, continued friction, personal idiosyncrasy, and conscientious application. It can, however, I think, be stated that in experiment they represent a real advance in preventive medicine, the indications being that tar, oil, and dyestuffs in particular are resisted. Against soaps and oil soluble irritants they would appear theoretically less useful, though after exposure highly remediable. Research on these points is proceeding.

I would be very grateful if any who are disposed to give the preparation a trial would report their findings, especially regarding the capacity to reduce the incidence of occupational dermatitis, whether that of housewife or workman.

I wish to express my gratitude to Messrs. Halden of Manchester for their continuous help, and to Mr. J. Holden, their chief research chemist, for his co-operation in interpreting the chemical and physical data involved.

REFERENCE

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CLINICAL AND SOCIAL SURVEY OF MALE LINEN WEAVERS

BY

JAMES DEENY, M.D., B.Sc., D.P.H., M.R.C.P.I.

Lurgan

AND

H. S. BOOKER, M.Sc.

London School of Economics

Lurgan in Northern Ireland is one of the chain of small linen-manufacturing towns stretching south-west from Belfast. The population of the urban district increased by 10 per cent. between 1926 and 1937—a rapid development which suggests that conditions there have been as attractive as in most places in Northern Ireland. In the same period the increase in the number of houses was sufficient to reduce the density of occupation from 4.5 to 4.1 persons per private house, which latter figure is as low as the figure for all Northern Ireland and lower than the figure for all urban areas in Northern Ireland. The crude death rate is slightly below that for Northern Ireland as a whole, and the infantile mortality rate is low, particularly when considered in conjunction with the high birth rate. On the basis of the 1937 population the figures are as follows:

1933 to 1937	Northern Ireland	Lurgan
Crude birth rate	19.7	23.3
Crude death rate	14.4	14.2
Infant mortality rate	78	71

Of the population insured under the Unemployment Insurance Acts 70 per cent. is dependent on the textile industry, and in particular upon linen weaving. During 1937 30 per cent. of the insured population of Lurgan was unemployed, while in the first six months of 1938 a very great increase in the number registered as unemployed brought the percentage to 40. Of the insured population nearly one-half consists of females. For this survey men of Lurgan were invited to present themselves for examination provided they were normally employed as weavers, were able-bodied, and were under 47 years of age. A man was regarded as able-bodied if he did not consider himself to be sufficiently ill to attend his doctor for medical treatment, although as a panel patient he could have obtained it freely. Altogether 202 men were examined (by J. D.), and it is thought that they were typical of the male weavers in Lurgan.

Method of Examination

The method of examination was planned after a visit (by J. D.) to the Rowett Institute at Aberdeen and to the areas where the Carnegie Research on Nutrition was being conducted by Sir John Orr and his staff; the clinical part of the present survey is based on similar methods, modified for adults. The social part is based on a survey carried out in 1933 in Vienna by Götzl, Kornfeld, and Nobel. To reduce subjective assessments to a minimum, certain standards were adopted.

Height.—Measured in shoes or boots, to the nearest quarter of an inch.

Weight.—Measured to the nearest pound, each man wearing only shoes, socks, trousers, and underclothing, the average weight of these being 4½ lb. Except where specifically stated the weights given include the weight of clothes worn.

Trochanteric Height.—Measured from the instep to the upper palpable limit of the great trochanter, to the nearest half-inch.

Bisacromial Width.—Measured by a "pelvimeter" from the tip of one acromion process to the other, to the nearest quarter of an inch.

Haemoglobin.—The haemoglobin content of the blood was estimated by means of a "Dare" haemoglobinometer and expressed as a percentage. For comparison with the results of other investigators the values have also been converted into Haldane equivalents.

Winging of Scapulae.—Recorded as present when the angle between the horizontal and a line joining the lower angle of the scapula and the greater tuberosity of the humerus was less than 45 degrees.

Complexion.—Recorded as normal unless marked pallor was present.

Follicular Hyperkeratosis.—Recorded as present when papillation and keratinization of hair follicles was seen in at least two areas of the body and with at least six obvious papillae to the square centimetre in one area.

Pyogenic Infections.—These included pimples, furuncles, carbuncles, impetigo, styes, and septic wounds and abrasions.

Frontal Bossing.—Only diagnosed if there was a separate boss on each frontal bone.

Harrison's Sulcus.—Diagnosed with arms stretched above head to lift thorax.

Cervical Adenitis.—Recorded as acute or tuberculous.

Chronic Upper Respiratory Catarrh.—Diagnosed on examination of the condition of the nasal mucous membrane and (*a*) in the first hundred cases, on the presence of any post-nasal discharge; (*b*) in the second hundred cases, only when the discharge was purulent.

Tuberculosis.—Only pulmonary tuberculosis was recorded, and this was diagnosed on the detection of moist adventitious sounds persisting on coughing and associated with other definite signs and symptoms.

Teeth.—Classified as (1) excellent; (2) caries (gross caries present in three or more teeth); (3) pyorrhoea; (4) extractions (more than eight teeth extracted); and (5) dentures.

Adenoids.—Diagnosed only when breathing was obstructed or facial appearance affected by post-nasal growth.

Finally, an opinion was formed as to whether the man was suffering from clinical malnutrition.

It is not claimed that this method divides the men in any objective way. It is claimed that it effectively divides them into two groups, the men of one group being apparently in a much better physical condition than those of the other group. In the whole inquiry 110 out of 202 cases were classified as suffering from malnutrition, and the principal use made of the figures is to find what clinical and social conditions are associated with this classification of malnutrition. The men were examined in the period March to May, 1938, and in order to show that the subjective valuation of borderline cases did not vary materially during the period of the investigation a comparison is made between the first 100 cases and the remaining 102. The majority of the results are remarkably consistent, an exception being the haemoglobin content of the blood, which is significantly higher in the second hundred cases. As the other differences are all of a size which might be expected from the operation of elements of pure chance it is felt that this variation must be an involuntary modification of the assessment by the investigator. Cumulatively there is some evidence that the second hundred cases were slightly more healthy than the first hundred. This evidence consists in the slightly greater trochanteric height and bisacromial width, and in fewer periods under the doctor's care. In addition the proportion of cases with defects is lower in fifteen out of twenty-three items in the second hundred cases. As great a proportion of the second hundred is classified as suffering from malnutrition as in the first hundred.

Comparison between British and Lurgan Men (allowing in Each Case for the Weight of Clothes worn and for the Height of Footwear)

	Weight	Height
	st. lb.	ft. in.
Great Britain:		
Men in industry	9 9	5 6½
Unemployed men	9 1½	5 5½
Lurgan Weavers:		
All cases	9 2	5 6½
Cases not malnourished	9 6½	5 6½
Malnourished cases	8 12	5 6½
Standard Deviations:		
Men in industry (G.B.)	22 lb.	2.7 in.
Lurgan weavers	14 lb.	2.1 in.

In Britain an allowance of 8 lb. was made for the weight of clothes; in Lurgan, where the men were weighed with fewer clothes on, the allowance was 4½ lb. In Britain the height was taken while the men were wearing very thin heelless slippers, for which there was no allowance; in Lurgan an allowance of three-quarters of an inch was made for footwear. The homogeneous nature of the Lurgan sample is illustrated by the smaller standard deviations.

Cathcart, Hughes, and Chalmers's (1935) survey in Britain showed that men who had been continuously unemployed for at least six months were markedly shorter as well as lighter than those employed. The average height of the Lurgan men was equal to that of the British employed, and there was no difference in height between malnourished cases and those not malnourished. The average weight of the malnourished Lurgan men was less than that of those not malnourished, and even those not malnourished were lighter than the British employed.

Age and Weight

In Britain the average weight of employed men increased with age, but among the unemployed over 23 the average weight increased only very slightly with age. Among the Lurgan weavers below the age of 40 there is no indication of increasing weight with increasing age, from which we infer tentatively that the condition of Lurgan weavers approximates to that of the British unemployed. In the cases classified as malnourished there is a slight fall in the average weight as age increases from 25 to 40 years. This small negative correlation between weight and age leads us to think the condition of these weavers is worse than that of the average of the British unemployed examined by Cathcart and his co-workers.

Comparison of Age and Weight

Age	All Cases		Malnourished		Not Malnourished	
	No. of Cases	Average Weight	No. of Cases	Average Weight	No. of Cases	Average Weight
		st. lb.		st. lb.		st. lb.
Under 20	21	8 13½	13	8 10	8	9 5
20 and under 25	22	9 7	11	9 4	11	9 11
25 and under 30	39	9 8	20	9 5½	19	9 10
30 and under 35	51	9 6½	28	9 4	23	9 10
35 and under 40	40	9 6	23	9 2	17	9 10
40 and over	29	9 12	15	9 8½	12	10 2
20 and under 30	61	9 7½	31	9 5	30	9 10½
30 and over	120	9 7½	66	9 4½	52	9 11

It may be that lack of a positive correlation between weight and age in a population of men in the physical prime of life is a good indication that the population is suffering from long-standing malnutrition.

Comparison of Malnourished Cases and Cases not Malnourished

	Cases 1-100	Cases 101-202	All Cases	Malnourished Cases	Cases not Malnourished
Number of Cases ..	100	102	202	110	92
Average—					
Age in years and months (Standard deviation)	31 5	31 3	31 4 (7 6)	31 2	31 6
Weight in stones and lb. (Standard deviation)	9 6.2	9 6.3	9 6.3 (14.0 lb.)	9 2.5 (13.5 lb.)	9 10.7 (13.9 lb.)
Height in feet and inches (Standard deviation)	5 7.3	5 7.2	5 7.3 (2.1 in.)	5 7.3 (2.2 in.)	5 7.2 (2.0 in.)
Trochanteric height in inches	40.9	41.2	41.1	41.1	41.0
Bisacromial width in inches	14.8	15.2	15.0	14.9	15.2
Haemoglobin (Dare) ..	85.9%	90.9%	88.6%	88.2%	89.1%
(Standard deviation)			(8.1%)	(8.1%)	(8.1%)
(Haldane)	99.6%	105.4%	102.8%	102.3%	103.4%
Illnesses receiving medical attention in three years (1935-7)	4.0	3.3	3.7	3.6	3.8
Percentage of Cases with—					
Winging of scapulae ..	36	39	38	46	27
Listlessness	27	25	26	40	9
Pallor	46	38	42	52	30
Dry skin	40	42	41	63	15
Dry and lustreless hair ..	29	35	32	51	10
Follicular hyperkeratosis	46	48	47	65	25
Pyogenic infections ..	16	16	16	24	6
Chronic conjunctivitis ..	8	4	6	5	8
Blepharitis	7	5	6	6	5
Frontal bossing	5	2	3	5	2
Harrison's sulcus ..	13	10	11	14	9
Beading	15	10	12	15	9
Inverted pigeon chest ..	18	14	16	19	12
Tuberculosis of bones and joints	1	1	1	2	0
Tuberculosis	10	3	6	11	1
Palpable cervical glands	44	38	41	47	34
Cervical adenitis ..	5	1	3	5	1
Coryza	4	5	4	5	3
Chronic upper respiratory catarrh	66	50	58	55	61
Bronchitis, including smokers' bronchitis	34	27	31	28	34
Enlarged tonsils	37	30	34	35	32
Adenoids	9	8	8	12	4
Marked pyorrhoea ..				29	15
Malnourished	54	55	54	100	Nil

Other Differences

The other objective differences between the malnourished cases and those not malnourished are slight. The average trochanteric height, like the total height, is similar in each group; in fact in each case the average is very slightly greater in the malnourished group. In contrast is the bisacromial width, which does seem to be connected with the state of nutrition; the malnourished cases are not so broad, as well as not so heavy, as those not malnourished. The haemoglobin content of the blood is slightly lower in the malnourished cases. The malnourished cases are not the more frequent attenders at the doctor's for treatment. This suggests that they were not conscious of ill-health and under-nourishment, or that if conscious they were too inert to have the condition rectified, or perhaps they had little faith in the ability of the doctor to rectify the condition.

When we consider the subjective valuations the evidence of malnutrition is much more marked. Of the malnourished cases, 40 per cent. were classified as listless; 63 per cent. as having a dry skin; 51 per cent. as having dry and lustreless hair; 65 per cent. as having follicular hyperkeratosis; and 24 per cent. as having pyogenic infections. The figures should be compared with 9, 15, 10, 25, and 6½ per cent. respectively for the same conditions among the weavers not called malnourished. Most of the other items also show to the disadvantage of the malnourished cases, but there are some exceptions. In particular it is noticeable that the proportions of men with chronic conjunctivitis, with chronic upper respiratory catarrh, and with bronchitis are higher among cases not malnourished. There is very little difference in the proportions with enlarged tonsils in the two groups. The proportion with marked pyorrhoea is nearly twice as high in the malnourished cases as among cases not malnourished, while 12 per cent. of the malnourished cases have adenoids as compared with only 3 per cent. of those not malnourished.

Income and Size of Family

The average size of families from which the weavers came was 5.2 persons, but this does not mean that on an average ten families contained fifty-two persons, for the census showed only forty-two persons per ten private houses. The apparent discrepancy is due to the greater chance of choosing a man from a large family than from a small one, thus giving greater weight to large families. In the four years 1934 to 1937, inclusive, the number of national health insurance stamps on the cards of the weavers showed that the malnourished cases worked on the average in thirty-five weeks in each year, as compared with forty weeks for those not malnourished. Thus there is some evidence against the hypothesis that the warm humid atmosphere necessary for linen weaving, combined with small earnings, makes the health and physical condition of employed weavers inferior to that of the unemployed with current rates of benefit and unemployment assistance.

Social Environment of Lurgan Weavers

	Malnourished Cases	Cases not Malnourished
All Cases:		
Number	110	92
Average number of health insurance contributions per year (1934–7 inclusive)	35	40
Persons per family	5.24	5.16
Weekly income per family	53s. 5d.	67s. 4d.
Weekly income per person	10s. 4d.	13s. 0d.
Proportion married	72%	74%
Single Weavers:		
Number	31	24
Persons per family	5.5	6.1
Weekly income per family	73s. 0d.	94s. 1d.
Weekly income per person	13s. 4d.	15s. 0d
Married Weavers:		
Number	78	67
Persons per family	5.1	4.8
Dependent children per family	2.6	1.9
Weekly income per family	45s. 6d.	58s. 7d.
Weekly income per person	8s. 11d.	12s. 1d.
Weekly income per person in families:		
Without children	13s. 0d. (15)	18s. 10d. (19)
With 1 child	12s. 7d. (8)	16s. 2d. (8)
With 2 children	9s. 1d. (11)	11s. 8d. (16)
With 3 children	8s. 11d. (18)	9s. 5d. (11)
With 4 or more children	6s. 10d. (26)	8s. 2d. (13)

The figures in parentheses give the number of cases to which the incomes apply.

The average income per family was nearly £3 per week, and per person 11s. 4½d. The family income of the malnourished weavers averaged 14s. per week less than that of weavers not malnourished. Usually it is stated that poor families tend to spend a greater proportion of their income on food than richer families, and in general this is true. It may not be true of a homogeneous group of workers living near the poverty line. In this Lurgan area all families tend to live in similar types of houses, and hence to pay similar rents and rates whether the family income is 50s. or 70s. per week. Similarly with other items of expenditure, though perhaps not to so great a degree as with household accommodation. Workers living in a homogeneous group, such as these Lurgan weavers, tend also to preserve a similar outward appearance of well-being even when incomes differ. Thus expenditure on food is often among the first to be reduced when income falls. Fixed charges tend to be very similar among these Lurgan families, and as the men will rarely sacrifice their cigarettes they amount to about 20s. a week.

	s.	d.
Rent and rates	6	0
Light	2	0
Gas		6
Coal	3	0
Weekly payments for insurance and clothes	5	6
Tobacco	2	0
Sundry	1	0
	20	0

What is left may be called "free expenditure," and from this free expenditure food must be bought. Thus, though the income of families of men not malnourished is 26 per cent. higher than that of malnourished men, the "free expenditure" is 42 per cent. higher. Among the families of married men only the discrepancy is even more marked.

Family Incomes in the Two Groups

	All Weavers		Married Weavers	
	Malnourished	Not Malnourished	Malnourished	Not Malnourished
Average income per family	s. d. 53 5	s. d. 67 4	s. d. 45 6	s. d. 58 7
Ratio	(100)	(126)	(100)	(129)
Income minus fixed expend. of £1	33 5	47 4	25 6	38 7
Ratio	(100)	(142)	(100)	(151)
Average number of persons per family	5.24	5.16	5.1	4.8
"Free expenditure" per person	6 4	9 2	5 0	8 1

When the cases, married and single, were grouped together very little correlation was seen between malnourishment and family size. When the division is made it is revealed that married men who belong to large families tend to be malnourished, and that single men who belong to large families tend to be well nourished.

Persons per Family

	Malnourished Cases	Cases not Malnourished
Married weavers	5.1	4.8
Single weavers	5.5	6.1

The income per person in the families of the single men examined was greater than that for married men. This is presumably because the children have grown up, are working, and are making some contribution to the family income. There is every reason to suppose that these families, before the children started working, were in a position much inferior to their present condition, and that the large families at present in the more favourable position were then the poorer.

Families of Married Weavers

	Families	Persons	Children	Total Income	Income per Family	Income per Person
With 0 to 2 Children:				s.	s.	s.
Malnourished	34	129	30	1,490	43.8	11.6
Not Malnourished	43	169	40	2,585	60.1	15.3
Total	77	298	70	4,075	52.9	13.7
With 3 or more Children:						
Malnourished	44	272	176	2,063	46.9	7.6
Not Malnourished	24	155	91	1,344	56.0	8.7
Total	68	427	267	3,407	50.1	8.0

It may be noted that 65 per cent. of the married weavers with three or more children were classified as malnourished, compared with only 44 per cent. of those with none, one, or two children. The average income in families with three or more dependent children is only 8s. per person per week, but it is 13s. 8d. per person in families with two or fewer children. There is a further point to be considered. Only sixty-eight out of 145—less than half—of the married weavers belonged to families with three or more dependent children. There were 337 children dependent on these 145 weavers, and 79 per cent. of these children lived in families with three or more children dependent and where the family income averaged only 8s. per person per week. Expressed another way, more than half of the income of these families went to families which contained only one-fifth of the children. The best way to overcome this difficulty is probably by the granting of family allowances, not by individual firms but by the public authority.

Summary

A total of 202 male linen weavers living under similar conditions and thought to be typical of many linen workers in Northern Ireland were examined; 54 per cent. were classified as malnourished.

These malnourished men are no shorter, but are considerably lighter and slighter, than those not malnourished. The most marked differences, however, between the two groups appear among items which one would like to ignore as not being sufficiently objective; for instance, a large proportion of the malnourished cases are classified as being listless and having a dry skin and lustreless hair.

The malnourished men work less regularly and have a lower income per family and per person than those not malnourished. The men who are well nourished consulted the doctor rather more often than those badly nourished. Married weavers with large families are more liable to malnourishment than those with small families, but when the children start earning and making contributions to the family expenditure the single men then belonging to the large families are less likely to be malnourished. As those single men who belong to large families are just the ones most likely to have been malnourished as children the inference is that malnourishment is a transient phase, leaving few permanent effects and being easily overcome by an increased family income.

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Clinical Memoranda

A Case of Laryngeal Vertigo

Dr. D. K. Adams, in the *Journal* of April 4, 1936 (p. 685), described a case of laryngeal vertigo, and suggested that it seemed improbable that the clinical incidence of seizures of that type was as rare as a review of the literature indicated. The following note of a similar case might be of interest.

CLINICAL RECORD

A collier aged 46 was certified incapable of work on May 4, 1936, with "bronchitis." There was a history of several previous attacks. On May 15 he reported that on the previous day he had experienced a peculiar "bronchial" spasm, starting as a tickling sensation in the throat, and developing into a deep and uncontrollable grating cough. He then went unconscious, and remained so "for a minute or more." On recovery, apart from feeling slightly dazed, he was quite well. He perspired profusely, but was able to resume the task he had been doing before the "attack" came on.

He was obese, weighing 14½ stone and standing 5½ ft. high. There was nothing of note in his previous history apart from attacks of bronchitis. There was no record of epilepsy in his family history. His face was florid; his manner somewhat anxious. Emphysema of the lungs was present, but not to a very pronounced extent. The heart appeared to be normal and the sounds were of good tone. No abnormality of the abdominal organs was made out. The urine was normal; the tendon reflexes were elicited normally; and the pupils were equal and reacted briskly. Ophthalmoscopic examination revealed no disease of the fundi. *X*-ray examination of the skull was not carried out, but a radiograph of the chest showed no abnormality. The Wassermann reaction was negative, and the blood pressure 175/100. His appetite was good, and he had no dysphagia or dyspepsia. There was some granular pharyngitis, but otherwise the larynx was normal. There appeared to be no disease of the external or internal ear. After a fortnight he felt very much better, and was allowed to resume his occupation.

On January 19, 1937, he complained that he had had another "attack." The clinical findings were as before, but this time his blood pressure was 260/140. He was certified unfit for his employment, and was kept under observation until December, 1937, when he secured work of a light and suitable kind as a club steward.

By December, 1937, he had had five "attacks," at irregular intervals. The fit always began with a tickling sensation in the throat and behind the sternum. Then a deep cough started, which he described as being "deep in the lungs and grating." This was followed by loss of consciousness. After the first attack he realized in all the others that he was going to lose consciousness. According to onlookers the fit lasted only "one or two minutes," during which he was absolutely unconscious; the eyes rolled to one side, he was quite immobile, there being no clonus or tonus. Neither bladder nor bowel was evacuated. When he came round he perspired profusely, but, apart from feeling slightly dazed, he was able to resume what he had previously been doing—for example, on one occasion he was able to resume his game of billiards. In every instance he felt a choking sensation. From the time of feeling the tickling in the throat to losing consciousness he estimated that about two or three seconds elapsed. On four of the five occasions he had been seated when the attack came on. On the fifth he was playing billiards, the throat tickling began, and he had time to walk to the corner of the room for the support of the wall before he became unconscious. Within two or three minutes he was able to carry on. He said that he always felt "done up" on the following day. Blood-pressure readings at various dates showed the following figures: 260/160, 140/90, 150/90, 160/80, and 176/100. Since he has worked as a club steward he has performed his duties without any further attacks.

COMMENTARY

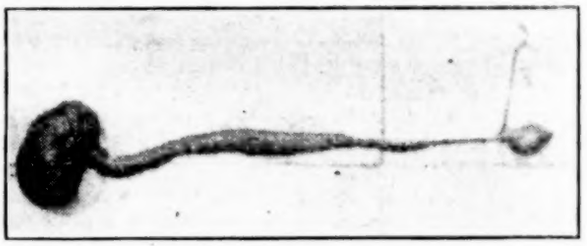
Adams reviews the history, discusses the aetiology, and analyses the cases in his article. Opinions as to the nature of the condition are diverse. Some regard it as being functional, others organic. In the present case the fact that the man was anxious about losing his job if he were absent too long through illness, that his attacks occurred when he was in no danger of sustaining injury, and that they have ceased since he obtained a comfortable situation, seems to suggest a functional basis. On the other hand, the blood-pressure recordings suggest an organic cause, perhaps a cerebral spasm.

Doncaster. FRANK J. P. O'GORMAN, F.R.C.S.Ed.

An Unusual Fatality following Parturition

The following case, in which a confinement ended fatally owing to unusual causes, appears to be of sufficient interest to merit publication.

On Friday, September 30, 1938, I received a midwife's call to visit a patient during her third labour on account of prolonged first stage. The woman's age was 34, and both



previous confinements had been quite normal. On examination I diagnosed an occipito-posterior position of the foetal head as the cause of the delay. Somewhat later, when full dilatation of the cervix had taken place, I refrained from manual intervention, as I felt certain that the patient would be able to deliver herself. This she actually did two hours later, under a light general anaesthetic. I remained with her for nearly an hour after parturition, and her condition was apparently normal later on that night. Except that labour had been somewhat prolonged, there was nothing abnormal about the case: the after-birth had been completely expelled, there had been no excessive loss of blood, and the uterus was well contracted. The urine had been tested before labour on several occasions and was found to be normal.

Early on Saturday morning, October 1, I received an urgent telephone message to visit the patient at once. On arrival a few minutes later I found her dead. I was told that on waking at 7 a.m. she had remarked that she did not feel very well, but did not complain of any pain, and had asked for a cup of tea. Having drunk it about half an hour later she had suddenly collapsed and died.

At the subsequent post-mortem examination an enormously dilated and sacculated right ureter was discovered, the right kidney also being somewhat deformed. The condition must have existed for a long time, and may well have been congenital. The uterus, vagina, and bladder were all intact, and no injury was discovered. The right ureter had ruptured at the site of one of the saccules, about an inch from the bladder, with the result that a considerable quantity of urine had escaped into the peritoneal cavity, causing the onset of general peritonitis and subsequent collapse due to shock. The bladder wall appeared to be thickened, as was the right ampulla, which explains the dilatation of the right ureter. The left ureter was also thickened, but presented no gross deformity.

The accompanying photograph shows the right kidney and complete ureter, with a probe marking the site of the rupture, near which will be seen a portion of the bladder wall.

Maidenhead. W. S. WOOD, M.B., B.S.

Reviews

URTICARIA AND HISTAMINE

Urticaire et Histamine. By Noël Fiessinger and Alfred Gaydos. (Pp. 109; 7 figures. 22 frs.) Paris: Vigot Frères. 1937.

Ever since Sir Thomas Lewis published his researches on the "triple réponse" the relation of urticaria to histamine (or at least to the bodies nearly allied to that compound, which Lewis with scientific caution has designated "H-substance") has been a subject of speculation among dermatologists. Dr. Fiessinger has come to the conclusion that the cause of urticaria is the circulation of toxic amines among which histamine occupies the place of honour. He bases this statement on two sets of proofs: in the first place the analogy between the effects of histamine on the skin and the manner in which urticaria appears; secondly, on the efficacy of the systematic treatment of urticaria by means of histamine. The way in which histamine causes urticaria seems to be by the development of an excessive reaction towards this body, which is always present in some degree in the circulating fluids of the organism. The employment of histamine for the cure of urticaria appears to be an example *par excellence* of a homoeopathic remedy, or, more vulgarly put, "of a hair of the dog that bit you." Various attempts have been made to employ histamine as a cure for urticaria, and the method which Dr. Fiessinger finds most effective is ionization. By this means histamine is introduced into the organism without trauma. There is a violent and typical local reaction, but this is speedily followed by a diminution of the urticarial attacks. Ionization is carried out every second day for about ten minutes, and few cases apparently need more than six séances to bring about either cure or in any case very considerable improvement.

Dr. Fiessinger claims good results in many cases of rebellious chronic urticaria which have been refractory to other methods of treatment, and he has had extremely few cases of failure. He has also tried it in cases of chronic eczema, but here he has had no success at all. The explanation of the efficacy of histamine in these cases is by no means clear, but the author thinks that the excessive reaction due to the local application of histamine acts as a sort of vaccination against the effects of the histamine produced by the metabolism of the patient. Whatever may be the true explanation of the phenomena observed there is no doubt that if Dr. Fiessinger has initiated a successful treatment of chronic urticaria he has made an important advance in dermatological therapeutics.

RADIOGRAPHY OF THE DIGESTIVE TRACT

Clinical Roentgenology of the Digestive Tract. By Maurice Feldman, M.D. (Pp. 1,014; 358 figures; 179 tables. 45s.) London: Baillière, Tindall and Cox. 1938.

In this book of a thousand pages Dr. Maurice Feldman has brought out an excellent account of the application of roentgenology to the elucidation of diseases of the digestive tract. The subject is approached from the side of pathology, little stress being laid on the normal appearances. Full descriptions of the various lesions which may occur precede each discussion of radiological appearances; their frequency, pathological varieties, and complications as well as possible aetiological factors being considered before the actual *x*-ray findings are discussed. This pathological part of the book gives evidence of much reading and summarizing of the available European and American literature. It is useful, though probably better done in textbooks of pathology; it tends to blur the picture and lengthen unnecessarily a book whose title leads one to expect primarily and predominantly a description of radiological appearances and their differential diagnosis. The author's sense of completeness leads him to include in his clinical roentgenology such conditions as congenital absence of the oesophagus.

It is as a textbook and guide to the *x*-ray appearances of lesions of the digestive tract, however, that the book is to be judged, and in this respect the descriptions and discussions of the author are on the whole sufficient, concise, and clear. The text is up to date. The actual radiographs reproduced as illustrations leave much to be desired. Radiographs of even the common lesions—for example, carcinoma of the stomach and peptic ulcer—lack sharpness and character; this may be partly because the pictures are too small, but the prints themselves are not clearly defined. Ulceration of the duodenum is dealt with at length, both the direct and indirect signs, but variations of the strial pattern in the duodenum are not well shown. The author discusses short oesophagus or thoracic stomach, but does not show the pathognomonic sign for differentiating a para-oesophageal hernia, the taenia of curled-up gullet lying beside the hernia. Diverticula of the small intestine are dealt with at length and an extensive literature is quoted, but the fine points of radiological appearances are lacking. Similarly in terminal ileitis (Crohn's disease) the fine points of differentiation are not illustrated. Diverticulosis of the colon is fully discussed and illustrated, and in the diagnosis of carcinoma of the colon the strial appearances after air insufflation are rightly stressed. The finger-print impressions of lipping are not given sufficient importance.

The chapter on the gall-bladder is full and useful and the illustrations are adequate. The author has an irritating habit of following with a singular verb two or more subjects. The book is not wholly satisfying, but it covers the whole ground and will be of service to advanced students and practitioners.

PROTEIN CHEMISTRY

Chemistry of the Proteins. By Dorothy Jordan Lloyd, M.A., D.Sc., F.I.C., and Agnes Shore, B.Sc., A.I.C. Introduction by Sir Frederick Gowland Hopkins, O.M., M.B., D.Sc., F.R.C.P., F.R.S. Second edition. (Pp. 532; 101 figures; 33 tables. 21s.) London: J. and A. Churchill. 1938.

The twelve years which have elapsed since the publication of the first edition of this book have witnessed a considerable expansion of the boundaries of our knowledge of the chemistry of the proteins in all its aspects. The extension indeed has been such that it is not surprising that Dr. Jordan Lloyd has had to call in a collaborator for the purpose of rewriting her original book. It may be said at this point that the new work appears particularly free from those defects which so often result from collaborative effort.

Despite the fact that the new edition is almost double the size of its predecessor, the authors have found it impossible to cover the whole ground of the earlier edition. Eliminating those parts of the work which dealt with the application of protein chemistry to technology and industry, they have confined themselves to the question of the constitutional chemistry of the proteins and their physical chemistry. Of the two parts into which the book is divided, the first has chapters on such subjects as the nature

and constitution of the protein, methods of analysis, the biochemistry of proteins and amino acids, proteolytic enzymes; the second, the architecture of the protein molecule, the properties of protein solution, denaturation, and coagulation, etc.

From the point of view of the general biochemist the treatment of the subject is adequate; the diagrams and index are excellent. The physiologist and pathologist, however, will not find as many references to their particular fields as they might now expect in such a book as this. No reference, for example, appears to have been made to the treatment of muscular dystrophy with amino acids. On the other hand, the more academic reader may consider too much space has been devoted to Wrinch's theory regarding the cyclol structure of the protein molecule when there exists as yet so little chemical evidence in its favour.

BREWERS' YEAST

Die Bierhefe als Heil-, Nähr- und Futtermittel. By Dr. Julius Schülein. Second edition. (Pp. 262; 22 figures; 10 tables. RM. 11; bound, RM. 12.) Dresden and Leipzig: Theodor Steinkopff. 1938.

This is a comprehensive review of the uses to which brewers' yeast has been put in the fields of therapeutics and nutrition, both of human beings and of other animals. The first part of the book deals with nutrition generally and the parts played by the different vitamins, amino acids, and mineral salts, certain relations between vitamins and hormones, and the work of enzymes. In this part the author has fallen into the deplorably widespread mistake of thinking that "rat units" of vitamin activity bear a definite relation to international units. The latter are the amounts of activity contained in particular weights of particular vitamin preparations. The former, measured as the response of animals to a given dose, must vary enormously according to the conditions of the test at the time of the experiments. Hence there can never be a simple conversion of "rat units" into international units. Moreover, a statement is made that 1 international unit is equivalent to 2 γ of the crystalline synthetic vitamin B_1. This must have been based on insufficient evidence, for the League of Nations Permanent Commission on Biological Standardization has stated that 3 γ of vitamin B_1 are equivalent to 1 international unit. The latter part of the book deals admirably with the use of brewers' yeast in many illnesses of human beings—gastric and intestinal diseases, inflammation, beriberi, sprue, diabetes, tuberculosis, anaemia, pellagra, etc., to mention but a few; and for animals its use in cattle diseases, for pig-fattening, for horses, fur-bearing animals, sheep, birds, bees, and fishes. A bibliography of 613 references is given.

MALARIA IN HOLLAND

Malaria in the Netherlands. By N. H. Swellengrebel and A. de Buck. (Pp. 267; 23 figures; 2 plates. 5 Dutch florins.) Amsterdam: Scheltema and Holkema. 1938.

The Netherlands is the only country in North-Western Europe where malaria has retained a firm foothold up to the present day, and although the incidence of the disease has no doubt greatly diminished, it is not generally realized how serious the problem remains. In the present publication the authors first consider the geological and historical factors involved. They then show how the present geographical and seasonal incidence of the disease can be directly correlated with the peculiar habits of the vector. The majority of the malaria is benign tertian and the peak of its incidence is in the autumn with a secondary rise in the spring. Since *A. maculipennis*, existing in both malarious and non-malarious areas, appeared to be the only important mosquito, species sanitation seemed impossible until it was remarked that the mosquitos were of two races, the short-winged variety and the long-winged variety, each of which had very definite and distinct habits. The long-winged race go into true hibernation in September and are not associated with the autumnal transmission, but the short-winged race, although becoming sexually inactive in August, continue to feed voraciously until November. In fact the distribution of malaria and that of the short-winged mosquitos coincide precisely, and, furthermore, the distribution of this insect can be directly correlated with the presence of brackish water.

The extension of territory by reclamation at the expense of the sea has been one of the most potent factors in the conservation of malaria in North Holland, and the country will never be rid of malaria unless all efforts are directed to the elimination of salty water. The steps in elucidating this knowledge, the detailed study of the mosquitos, the transmission of the infection, and the methods of malaria control are all set forth most lucidly, and with a charm and modesty that are irresistible. The sections on the clinical aspects of malaria and the use of drugs are also written with sound common sense. Fundamental principles are so well illustrated that the book has an application far greater than its title implies, and altogether it can be most warmly recommended.

THE UBIQUITY OF SUICIDE

Man Against Himself. By Karl A. Menninger. (Pp. 486. 15s. net.) London: G. C. Harrap and Co. 1938.

Freud discovered the concept of the self-destructive instinct, and this book is an interesting essay on the theme that suicide, properly regarded, is not only the sudden destruction by a person of his own life, but also the long-drawn self-injury involved in asceticism, neurotic invalidism, drunkenness, mental disorder, and even physical illness. Man, says the author, is the battleground of two eternally opposing forces, death and life, and the former is apt to be too little regarded. Men not only struggle to preserve themselves and others; they have an extraordinary propensity to join hands with external forces in an attack on their own existence. They sacrifice themselves and devote their whole energies to injuring others. The doctor discovers that patients often do not want to get well, and that their solicitous relatives also do not want them to get well. His efforts are combated not only by bacteria and toxins but also by some perverse imp in the patient himself. Both these instincts, originally directed inward, are by development of personality gradually directed outward towards objects.

The incompletely developed person, instead of fighting his natural enemies, fights and destroys himself, sometimes quickly, sometimes slowly. He may accept responsibility for his destruction unwillingly or only in part, as when he succumbs to chronic alcoholism or drug-taking. He may accept no responsibility at all, as when he is the victim of a so-called accident which is really, though unconsciously, intentional. He projects the responsibility on fate or an enemy, but another person may neither accept responsibility for his destruction nor make any attempt to explain or defend it, and this attitude can be expressed, according to the theory of the author and those who think with him, by certain physical diseases. Dr. Menninger first discusses suicide as the most drastic and responsible failure at compromise between life and death, and then examines various forms of more successful

compromise, in which the impulse to destroy the self is diluted or diverted into many abortive, distorted, and chronic forms of self-destruction—those failures in life which seem to be directly related to obvious misconceptions and mismanagements on the part of the individual. Finally, he considers the possible means of deflecting these malignant self-destructive trends and avoiding the disasters and sacrifices by which they are spontaneously held in check.

Dr. Menninger's chapters on clinical technique and social technique—training the attitude of the individual and of society to use the destructive instinct for valuable ends—are full of practical wisdom. His view of human psychology certainly explains much of the present deplorable state of society all over the world, and he argues convincingly that only by methods like those which he outlines can human civilization—possibly even the human race—survive.

Notes on Books

The manual entitled *Administrative Science for Hospitals and Institutions* (London: Charles Knight and Co., 17s. 6d., post free), by Mr. A. MILSOM, a master of London, Bristol, and other provincial local government establishments, covers, as the subtitle indicates, a wide field, for it includes hospital and institution furnishing and equipment, stores, and kitchen routine, dietaries, inspection of foods, accounts, clothing, bedding, house linen, etc., as well as a description of allied departments associated with institutional administration. The book will be chiefly of interest to the hospital and institution steward and his staff as well as to members of the visiting committee, but it will also be found a useful work of reference for the medical superintendent, matron, and upper grades of the nursing and domestic staff, and will be a valuable addition to the library of the hospital or institution. An excellent index is included. The volume consists of twenty chapters in which detailed descriptions of the work and requirements of various departments in the hospital or institution are given, in addition to chapters dealing with administrative science, administrative items in which the medical information necessary for the lay staff and visiting committee is included, preparations for special occasions, and food values and dietaries.

The Chemistry of the Amino Acids and Proteins is a large volume of 1,031 pages, compiled by sixteen contributors and edited by Professor C. L. A. SCHMIDT of California University (Baltimore: Charles C. Thomas, 7.50 dollars). The subject of protein chemistry has a unique interest for biology, but it presents exceptional difficulties, and it has been necessary to have recourse to the most delicate methods of biochemistry and of physical chemistry. Hence the greater part of the volume under review deals with difficult and very specialized technical problems. The article of chief medical interest is that by Heidelberger on the relation of proteins to immunity. An article by the editor on the relation of the amino acids to products of biochemical importance also contains information of special medical interest. In general, the volume provides an authoritative review of a subject of very great importance in which substantial advances in many directions are being made at the present time.

The fortieth edition of Dr. HALLIDAY SUTHERLAND'S *First Aid to Injured and Sick* has been reprinted. The original booklet, by his father, appeared in 1887. This new reprint has been improved by the enlargement of the index, which now consists of four pages of double-column entries, and there is a section dealing with air raid gases. The publishers are E. and S. Livingstone of Edinburgh, and the price is 6d.

A Synopsis of Medicine, by Dr. H. LETHEBY TIDY, was first published nearly twenty years ago. A seventh edition has now appeared (John Wright and Sons, Ltd., Bristol, price 21s.) in which the text has been increased by about forty pages. Many of the articles have been entirely or extensively rewritten, though regional ileitis is the only "new" disease included. The rather remarkable omission of a section on carcinoma of the colon in previous editions has been corrected, and the index has been completely revised. This excellent textbook is deservedly popular, and, judging by the regularity with which the seven editions have succeeded each other, it seems likely that an eighth will be called for within the usual space of time.

The *Proceedings* of the International Congress on Rheumatism and Hydrology, held at Oxford in the spring of last year, and of the Bath Bicentenary Congress on Chronic Rheumatism, which immediately followed it, have been embodied in a volume of 350 pages, published by Headley Brothers, London (12s. 6d.). The opening papers are published in full, and summaries are appended in English, French, and German. The double event was extensively reported in the *British Medical Journal* of April 2 and 9, 1938, but it will be useful to have in such a handy form the full text of discussions covering the subjects of juvenile rheumatism, gout and rheumatism of metabolic origin, and climate as a causative factor. The volume includes the introductory addresses of the two presidents, Sir Farquhar Buzzard and Lord Horder.

The Public Attitude towards Mental Disease and Urgent Reasons for Early Treatment is a privately printed pamphlet by Dr. HORACE HILL. He has written it to hand to the relations of mental patients who are dubious as to the advisability of allowing their relative who may be struggling with a difficulty of mental adjustment to life to enter a mental hospital. It is couched in simple and persuasive language, and may prove useful to those who experience the difficulty of explaining to frightened relations the nature of mental treatment and the paramount necessity for starting it in the early stages of mental illness.

The electrolytic conceptions of biology are discussed in an interesting monograph by Dr. RUDOLF KELLER entitled *Die elektrischen Gruppen in Biologie und Medizin* (Zürich: Sperber-Verlag). An English summary at the beginning and an English comment on the subject as applied to paediatrics at the end of the volume help to make the German text easier to understand.

Die Methoden der experimentellen Chemotherapie, by Professor CLAUS SCHILLING of the Robert Koch Institute (Jena: Gustav Fischer, RM. 4.50), is a very useful monograph which gives precise details of the chief experimental methods of chemotherapy. The isolation, cultivation, and inoculation of all the chief types of parasites are described, and so also are the modes of administration and dosage of the chief drugs. The only aspect not fully dealt with is the problem of individual variation in response. This is rather an important omission, because the extent of variation determines the size of the groups that are needed to furnish significant results. Otherwise the monograph provides very full information regarding all the technical difficulties that beset chemotherapy.

The sixth edition of *Schafer's Experimental Physiology* is edited by Dr. W. A. BAIN, who was formerly lecturer under Sir Edward Sharpey-Schafer at Edinburgh. The general scope and form of the work have been maintained, but various new forms of apparatus are described. Particular mention may be made of a simple apparatus for carrying out Loewi's classical experiment which shows the liberation of acetylcholine by vagal stimulation of the frog's heart. The volume is well illustrated (ninety-seven figures), and contains full details of experimental technique; hence it deserves the attention of teachers. It is published by Longmans, Green at 7s. 6d.

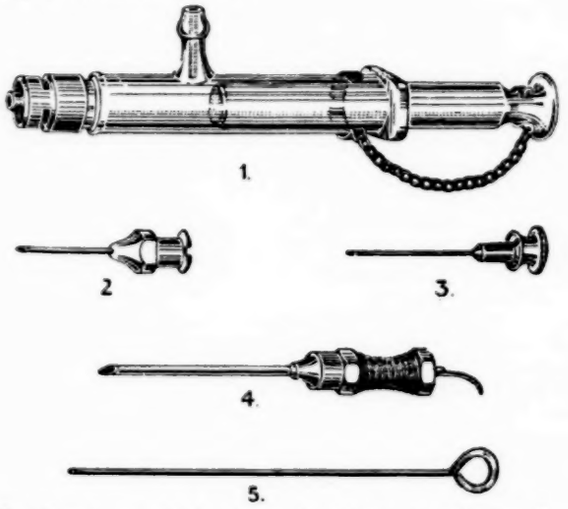
The fourth volume of the *New International Clinics*, edited by Dr. GEORGE MORRIS PIERSOL (Philadelphia, Montreal, New York: J. B. Lippincott Company, 42s. net per set of four volumes), contains original contributions of medical, surgical, paediatric, and obstetrical interest, of which the following may be mentioned: the placenta, recurrent attacks of vomiting in children, hypertension, tannic acid treatment of burns, insulin shock therapy, management of functional disorders of the colon, and prolapse of the rectum. There are also three clinics—of which the subjects are congenital arteriovenous fistula, differentiation between pulmonary and cardiac insufficiency in chronic pulmonary disease, and acute leukaemic lymphadenosis—and an exhaustive review of the adrenogenital and Cushing's syndromes.

Preparations and Appliances

SIMPLIFIED TECHNIQUE FOR BLOOD TRANSFUSION

Mr. J. HOWELL HUGHES, F.R.C.S. (Royal Infirmary, Liverpool), writes:

Various techniques for indirect blood transfusion have been described, but I have not seen the following combination of apparatus mentioned. I therefore feel justified in describing this method, although I claim no originality in the introduction of the individual parts. As the details of blood transfusion are so well known, I will confine myself mainly to a description of the apparatus used in a series of a hundred cases. The blood is obtained from the donor by a Lampert's needle, type V2A (Fig. 4), made of Krupp steel by the firm of Ernst Kratz of Frankfort-on-Main. This needle is polished inside as well as externally, and as a result clotting of the blood, which would interfere with the flow, does not occur. It will be seen from the diagram that there is a bent channel at the ejecting end, which controls the trajectory of the stream of blood, so that it can be collected in a receptacle without the attachment of rubber tubing. The needle, which has a fitted stylet (Fig. 5) is made in three sizes—14, 17, 20; the latter, however, is rather fine. The needle wall being thin the puncture made in the vein is only small, and so there is no discoloration of the arm due to oozing of blood afterwards.



The blood, to which citrate is added, is collected in a thermos flask of one and a half to two pints capacity. I have found the following method of sterilization quite satisfactory. The flask is always kept full of surgical spirit, and immediately before use it is well washed out with warm sterile water and then hot normal saline, which not only washes out any trace of spirit but also warms the interior of the flask. The cork is boiled and placed in position immediately after collecting the blood, which is thus kept at body temperature and is ready for immediate use, even should it prove necessary to transport it from the place of collection.

The blood is given to the recipient by a Rotunda pattern 50-c.cm. three-way syringe, to one lead of which is attached a Kaufman's syringe (Fig. 1). The latter consists of a glass syringe with a side-piece, a glass plunger, and, in the latest models, a metallic end into which fits the needle (No. 20). I have had special rustless steel needles made with perfectly fitting stylets (Figs. 2 and 3), as in the ones supplied there is a tendency to internal corrosion. The advantage of this syringe is that one can see whether the needle is in the vein by withdrawing the plunger and then make the circuit complete by withdrawing it until it is beyond the side-piece. The chain joining the plunger and the barrel is to prevent the plunger shooting out when blood is being pumped through the needle. Before use the leads are filled with normal saline, and 10 to 20 c.cm. of the saline is drawn up into the syringe and then the recipient's vein is entered. The lead with the perforated sinker attachment is put into the blood, while the third lead is left in the normal saline so as to enable saline to be drawn up through the apparatus at the end to prevent wasting the blood in the rubber tubing.

The calibre of the needle renders it impossible to force the blood in too quickly, and it usually takes twenty to thirty minutes to infuse one pint. Since using this apparatus I have not had to cut down on a recipient's vein however inaccessible it first appeared. All the parts of the apparatus except the thermos flask can be sterilized by boiling, but dry heat sterilization will minimize rust formation. The whole apparatus was supplied by Messrs. Alexander and Fowler of Liverpool, and the diagrams have been drawn by Mr. Douglas Kidd.

HEARING AIDS

Although much yet remains to be done, there has in recent years been a great deal of research work on hearing aids, chiefly in the direction of improving the valve amplifier type of aid, which used to have the disadvantage of being rather large and cumbersome. The newest valve amplifier hearing aids are comparatively inconspicuous.

The Bonochord Vest Pocket Valve Amplifier (Model P 3), made by Messrs. Allen and Hanburys, 48, Wigmore Street, London, W.1, has a piezo-electric crystal microphone, three-valve amplifier, and, alternatively, a telephone earpiece which can be held to the ear by a head-band, or a small orifice-fitting earpiece which is held in position by a wire loop. It is divided into three units—the valve unit with a detachable microphone earpiece, high-tension battery, and low-tension battery; these can be carried on the person in different pockets, with the microphone worn either on the coat lapel or in a waistcoat pocket, or, in the case of a lady, the three units can be affixed to a linen belt under the dress. On testing this hearing aid it was found that the maximum output is 60 decibels, no background noise was audible, and it appeared to be a suitable hearing aid in cases of middle-ear deafness, otosclerosis, and most types of nerve deafness. The weight, complete with batteries, is 1 lb. 10 oz., and the price 20 guineas.

The Vernon-Spencer Valve Amplifier (Model VS 1) is made by Messrs. Vernon-Spencer (Panaudion Ltd.), 120, Wigmore Street, London, W.1. It has a piezo-electric crystal microphone, with a three-valve amplifier, built-in microphone, and a detachable ear-phone which can be disconnected and carried in the pocket when not in use. It is contained in a single slim case covered in morocco leather, which can be carried in the hand, in a man's outer pocket, or in a lady's handbag, measuring 7¼ inches by 3¼ inches by 1¼ inches. It was found on testing to have a wide over-all frequency response, covering the full range of speech sounds, background noise being absent. A special 2-volt rechargeable low-tension cell, which is virtually an accumulator, is employed, with no jelly and no free acid. The same type of hearing aid may be obtained in two units, which can be worn inconspicuously in the pockets or under the clothes. The weight of Model VS 1 is 2 lb. and the price (complete with "trickle" charge) is 20 guineas.

HEALTH AND THE SOIL

BY

G. T. WRENCH, M.D.

The present era is one that has placed its wisdom at the periphery, and has, through the ingenuity and skill of its experts, expanded that periphery enormously.

A Modern Danger

This concentration at the periphery has led to a neglect of the centre, so that, while the number and public importance of the experts multiply, the philosophers, who strive to review and concatenate all sections of knowledge, continue to recede until they have almost reached the vanishing-point. Our problems, consequently, are no longer studied as a whole, but are split up, departmentalized, and confined to the experts most conversant with the particular knowledge amidst which a problem has appeared. An attempt is then made severally to solve it. If the problem is a localized one this attempt is successful. If on the other hand it spreads over several sections of knowledge, something vital is omitted and the attempt fails. The knowledge of the experts is too confined, too particular, too separate to produce a lasting solution.

No one foresaw this modern danger more vividly than the great Goethe, who uttered this warning in his *Wahlverwandschaften*: "Every evil shall be healed upon the spot, where it shows itself, and no one concerns himself about the place, where it really takes origin, whence it works its effects. For this reason it is difficult to take counsel." These words apply to all sections of knowledge of modern civilization, including that of the healing art. In knowledge of separate diseases and of certain immediate causes of each disease we have during the scientific-industrial era made marvellous advances. But in the central matter of health as the possession of the people as a whole, with the abolition of the bulk of weaknesses, ailments, and illnesses, we have advanced very little. Recently, however, we have made a definite advance.

This advance which we have made is the discovery—for so it may be termed, in spite of what now seems its obviousness—that imperfection of our food leads to so many minor and major phases of ill-health that some are beginning to regard it as the primary basic cause of the departure from health into disease.

Nature and Health

In devising life, Nature surely devised health with it—health of the soil, health of the river and sea, health of the plants, animals, and man. Are these separate healths, or are they really so interdependent that they form a whole, fulfilling the meaning of health as whole? There always has been, of course, a general belief that there is an intimate connexion between these healths, but this connexion has not been sufficiently studied. It cannot be demonstrated by research into disease and its causes; it can only be demonstrated by a study of it itself where it occurs. But research into healths has very few followers. Consequently not much is known.

The most notable studies of associated healths are those of soil, vegetables, and animals carried out by Sir Albert Howard and his assistants by the adaptation of a Far-Eastern form of soil nutrition at Indore. As a result, so notable was the health of the vegetables that Sir Albert concludes that the true role of insects, fungi, etc., "in agriculture is that of censors for pointing out the crops that are imperfectly nourished"; and of the animals fed upon these products he states: "I was able to study the reaction of well-fed animals to epidemic diseases, such as rinderpest, foot-and-mouth disease, septicaemia, and so forth, which frequently devastated the countryside. None of my animals were segregated; none were inoculated; they frequently came into contact with diseased stock. No case of infectious disease occurred. The reward of well-nourished protoplasm was a very high degree of disease resistance, which might even be described as immunity." Dr. Ehrenfried Pfeiffer, by a like care of the nutrition of the soil, has achieved very similar results. As a result of these studies of associated healths, farmers in Britain, on the Continent, in India, Africa, and elsewhere are finding that, by the careful composting of all that once took life from the soil and returning it to the soil for its food, they get an altogether unexpected health upon their farms. Further, Sir Robert McCarrison singled out the Hunza people of North-Western India in these words: "These people are unsurpassed by any Indian race in perfection of physique; they are long-lived, vigorous in youth and age, capable of great endurance, and enjoy a remarkable freedom from disease in general." The Hunza, I found, have for long followed out with the most meticulous care the principles of the nutrition of the soil which have had such favourable results under Sir Albert Howard and others. In brief, it seems that health is a consecutive process starting from the dieting and nutrition of the soil itself.

Principles of Soil Nutrition

Now the principles of this nutrition have been as much neglected under industrial civilization as have those of man. This neglect has given rise to the following powerful anathema by the late Professor F. H. King, at one time Chief of Soil Management, Department of Agriculture, U.S.A.: "Man is the most extravagant accelerator of waste the world has ever endured. His withering blight has fallen upon every living thing within his reach, himself not excepted; and his besom of destruction has swept into the sea soil-fertility which is the substratum of all that is living. It must be recognized that the phosphate deposits which we are beginning to return to our fields are but the measures of fertility lost from older soils, and indices of processes still in progress. The rivers of North America are estimated to carry to the sea more than 500 tons of phosphorus with each cubic mile of water. To such loss modern civilization is adding that of hydraulic sewage disposal, through which the waste of 500 million people might be more than 194,300 tons of phosphorus annually, a waste which could not be replaced by 1,295,000 tons of rock phosphate 75 per cent. pure. The Mongolian races, with a population now approaching the figure named, occupying an area little more than half of the United States, tilling less than 800,000 square miles of land, and much of this twenty, thirty, or perhaps forty centuries, unable to avail themselves of mineral fertilizers, could not tolerate such waste and survive."

Wastage of the Soil

Not only are the soil's natural foods extravagantly wasted, but the soil itself is being wasted and lost on a prodigious scale. One who has read official papers on this wastage can but be amazed that this age is sometimes spoken of as "the age of plenty" so witless is it at the centre. Messrs. Bennett and Chapline, in Circular No. 33 of the Department of Agriculture, U.S.A., give a truly terrific picture of the waste of the soil of the United States, due to man's wisdom being concentrated on the periphery and absent at the centre. Mr. Ratcliffe, in Pamphlet No. 64 of the Council for Scientific and Industrial Research of the Commonwealth of Australia, presents a similar terrifying picture of the dying soil of much of Australia under the onslaughts of man's search for fortune. Messrs. Jacks and Whyte, in Technical Communication No. 36 of our own Imperial Bureau of Soil Science, survey the dolorous stories they have received from the major part of the agricultural world.

The Medical Profession and Whole Health

If health is a whole, if it is a quality carried from the well-sheltered and well-nourished soil to the plants, the animals, and man, can one wonder that with a start so

injured our domestic plants and animals, which are the link between us and the soil, are subject to a great bulk of disease like ourselves? There seems, then, great need for our profession to enlarge its scope and get a conception of health and disease which is not limited to the human section of them, in which we work. If we do not do so, we may find that our discussions on malnutrition, invaluable as they have been up to the present, are in danger of becoming scientific superfluities. We may become a shut-in profession, suffering, as we even do to some degree already, from public devaluation, owing to our failure to reduce the bulk of illness and the increasing cost which accompanies it.

The difficulties of approach to whole health are undeniably very great, particularly in our own land, where agriculture has been caused to sink so low. But the attainment of whole health is an accomplished fact in secluded areas of the present earth, and what is done can become practical elsewhere when it fires the imagination of men. What men can do when their imaginations inspire them to achievement the modern power-world shows. But they have expanded that world so rapidly that they have almost lost their vision of the centre from which life springs—the living soil.

CHILD GUIDANCE

CONFERENCE OF CLINIC WORKERS

The fourth biennial Child Guidance Inter-Clinic Conference was held at the House of the British Medical Association in London on January 27 and 28. Those who attended, to the number of between two and three hundred, included professional members of staffs of clinics, directors of education, school medical officers, and others interested from all parts of the country. The conference was opened by Lord BLANESBURGH, president of the Child Guidance Council, who remarked that the ten years' work of that body had fully demonstrated that child guidance was no longer to be regarded, as it was at the beginning, as an experimental curiosity.

Treatment of Parents

On the first day of the conference discussions took place on the treatment of parents and on juvenile delinquency, and on the second day simultaneous sessions were held for psychiatrists, psychologists, psychiatric social workers, and administrative representatives. Sir WALTER LANGDON-BROWN, presiding over the discussion on the treatment of parents, said that it was abundantly clear to anyone who worked among cases of psychoneuroses that most of these cases had their origin quite early in life, and that extraordinary mishandling by parents, whether in the direction of "spoiling" or the reverse, was very often the cause of the trouble. Nor could great improvement be expected until a generation of properly guided children had grown up to be properly guiding parents. Miss R. S. ADDIS, who opened the discussion, spoke of the frequency with which a family neurosis was found, parent and child being involved in the same vicious circle. Under treatment improvement in the child might coincide with improvement in the parent, or, on the other hand, when the child got better the parent might collapse. The approach to treatment was through the child, but if it was suggested that the problem really lay with the parent this might lead on the parent's part to co-operation or, equally, to resistance. Both were possible bases for treatment. Dr. M. S. M. FORDHAM said that the advantages of treating parents were not only the possibility of a real cure of parent and child but a benefit to other members of the family as well. In the treatment of parents it was important not to identify with the child, for it was the parent and not the child who was the patient. Generally it was the child in the parent that required treatment, and, as children were allowed to behave badly and get benefit from it, it was important not to work against the child in the parent, who could also gain benefit from behaving badly.

Juvenile Delinquency

LORD ALNESS, who presided over the second session, said that as a judge in Scotland he had seen only too many cases of the deplorable effects of a savage sentence pronounced upon a juvenile delinquent. Informed public opinion was now adopting a completely different attitude towards the problem of juvenile delinquency from that which at one time prevailed. Nevertheless the problem continued urgent and menacing, judging from the latest figures.

Dr. DENIS CARROLL, director of the Institute for the Scientific Treatment of Delinquents, discussed the part played by psychotherapy in the prevention of delinquency. Delinquency was usually caused by a group of factors, some of them constitutional, others environmental, both early and late. They might be grouped into primary and secondary, the former usually necessitating skilled and often prolonged medico-psychological and possibly institutional care, while the secondary factors could often be adequately dealt with by simpler measures, especially those of a sociological kind. Such psychotherapy as was required for dealing with these secondary factors was usually indirect and might be applied by others besides medically trained workers. He considered that many advantages were to be gained by the training of probation officers in psychiatric social work and in the principles and needs of the psychotherapeutic approach. On the other hand, the doctor should have greater understanding of the methods and requirements of the court. He instanced the psychological methods in use and gave illustrations of the type of case to which they were usually applied. Professor A. M. CARR-SAUNDERS mentioned the Home Office inquiry into the causes of juvenile delinquency now being carried out under his direction. Two thousand boys from large cities who had been found guilty of indictable offences are being compared with the same number of boys of a like age from the same schools who have never been in conflict with authority. He said that in the questionary which had been prepared there were nearly sixty headings, and that no such comprehensive investigation had previously been attempted. Miss MADELEINE SYMONDS described the use made at London juvenile courts of the services of medical psychiatrists.

Personality Deviations

In the session for psychiatrists Dr. E. M. CREAK opened a discussion on personality deviations and diagnosis of psychoses. She said that the manifestations of psychosis in children were seen in certain examples of gross deterioration, such as Schilder's disease and congenital G.P.I. Here the personality changes were rapidly masked by organic features and tended to be overlooked, but they were often present in the early stages. Could they be regarded as showing anything in common with the psychotic manifestations which were never, or only very slowly, superseded by gross psychical degeneration? Instances of these were excessive "mood swing" or a labile affectivity bearing little relation to the world of reality, outbursts of excessive rage and grief, and alterations in the mechanics of behaviour, such as sleep and appetite. These appeared to undergo disturbance before any demonstrable organic change, and early in the illness might appear stereotypy, phases of motor excitement, and curious manifestations in the form of tics or repeated gestures, all preceding the ultimate development of what appeared to be a mechanical level of behaviour. The great difficulty in early diagnosis was in the very young case where, retrospectively taken, the history of infancy might be inaccurate. The late clinical picture included so much mental deterioration that it was liable to be mistaken for a congenital defective condition.

Dr. WILLIAM MOODIE said that in young children maniacal excitement was the commonest psychosis, appearing as meaningless over-activity, accompanied by incoherence and irrelevance of behaviour, speech, and thought. Dementia praecoxissima also attacked the very young; it was thought by some to be an early form of dementia praecox. Melancholia was rare, but was sometimes seen in a form resembling amentia, though with a history of comparatively recent onset. The prognosis in the child psychoses in general was not good, though spontaneous recovery was not unknown, and therapy was successful in some cases. Main treatment methods were attention to general health and habit of living, relief of mental irritation and stress, and removal, by some appropriate method, of any barriers to mental maturation. Dr. EMANUEL MILLER discussed a number of character traits which seemed to indicate the germinal layers of psychosis formation.

Dr. J. A. GLOVER, senior medical officer of the Board of Education, presided over the psychologists' session. He said that child psychologists by their work, which was regarded by some without enthusiasm, were convincing the public that psychology practically applied could confer a real benefit on some children, perhaps on all children, additional to the influence and instruction ordinarily imparted by the teacher. Miss M. I. DUNSDON described the educational psychologist working in the schools. She placed first among the things which might be expected of him that he should be able to discriminate between children whose problems were educational in origin and those whose difficulties had their roots in personality problems or temperamental instability.

The final meeting of the conference was on the subject of "substitute homes," and was presided over by Dr. A. H. NORRIS of the Children's Branch of the Home Office.

FOOD IN REPUBLICAN SPAIN

A MEDICAL MEMORANDUM

We have received a memorandum on the food situation in Republican Spain. It is commended to the notice of the medical profession in a foreword signed by Lord Horder, Sir F. Gowland Hopkins, Professor John A. Ryle, Professor R. A. Peters, Sir Robert McCarrison, Miss Dorothy J. Collier, and Dr. Janet Vaughan, who write: "Barcelona has fallen but the war in Spain goes on; indeed the shadow of war hangs over the whole of Europe. An analysis of the known facts about the food situation in Government Spain must be of interest to medical and scientific workers all over the world. The problems of Spain to-day may be our problems to-morrow." An abridged version of the memorandum is printed below. Gifts should be sent to the National Joint Committee for Spanish Relief, 4, Great Smith Street, London, S.W.1, or to the Friends' Service Council (Spain), Friends' House, Euston Road, N.W.1, marked "Food Memorandum Appeal."

Food Position before the Fall of Barcelona

It is clearly impossible (the memorandum states) under the stress of war conditions to collect extensive statistics concerning the incidence of deficiency diseases or the numbers of people dying of starvation. Members of the medical profession administering relief will clearly have more urgent administrative problems to consider than the collection of scientific data. It was felt, however, that a useful purpose would be served by gathering together such information as was available concerning the food situation in the districts of Spain under Government control. The figures quoted below all apply to a period before the recent advance on Barcelona. It is obvious that the sudden movement of refugees before the advancing rebel army must have intensified all relief problems.

Dr. Audrey Russell, delegate in Catalonia of the International Commission for the Assistance of Child Refugees in Spain, writing in the *Lancet* on December 17, 1938, says: "In Catalonia alone there are 1,100,000 children under 15 years of age, including refugees and the civilian population. Of them the workers of the International Commission for the Assistance of Child Refugees in Spain estimate that 825,000 are in grave need. The remaining 275,000 are the children of country peasants whose minimum ration can be supplemented by small amounts of local produce, such as eggs and vegetables."

Undernourished Children

All the relief work that is going on in Spain to-day covers only one-tenth of the children in most urgent need. For instance, there is no source of milk available for the city children between 2 and 5 years of age (of whom there are about 59,000) except the canteens run under the auspices of the Society of Friends, which cover about 5,000 children in the city of Barcelona. The State-controlled milk has therefore to be restricted to babies under 2. Milk brought into Spain by voluntary aid organizations is almost wholly distributed through the schools, and this covers only the children from 5 to 15 years of age. The minimum rations obtainable in the markets are not sufficient to supply basic needs. The diet obtainable is deficient in protein, fat, vitamins, and some minerals, especially calcium and iron. The result is that the children are rapidly using up their reserves of body fat, and are beginning to show evidence of undernourishment, amounting in some cases to semi-starvation. Nutritional anaemia, rickets, marasmus, and even starvation oedema are becoming common, especially among young children, for whom the available diet of coarse bread, beans, dried fish, and rice is particularly unsuitable. There is a great lack of fat in the diet, and to this may be attributed the fact that rickets—which has been practically unknown in Spain, where sunshine and olive oil have always been abundant—is now manifest in about 60 per cent. of the children under 2 years of age. With the onset of winter the mild form of rickets at present met with cannot fail to develop into a more acute form if present conditions are maintained.

On January 18, 1939, Dr. Audrey Russell cabled to the National Joint Committee for Spanish Relief: "Refugees from Borgas, Montblanch, Cervera district now streaming into Barcelona say homes blown to pieces during week of intense bombardment. Barcelona babies already rationed at 250 grammes milk, 100 sugar weekly. Impossible provide for new influx unless more supplies immediately. Please send every ounce possible milk and sugar. . . ." Dr. Richard Ellis states that this ration of milk is only skimmed milk. In any statement about rations he emphasizes the importance of remembering that the figures given are the maximum allowed, and that often owing to the breakdown or disorganization of transport, inevitable under war-time conditions, the theoretical ration cannot be produced. Also such rations are only available in the larger distributing centres and special children's colonies. The position in small isolated villages is variable. He states that the extraordinarily high sickness rate among the child population is striking evidence of general malnutrition. For instance, in a group of 460 children between 2 and 5, 175 were unable to attend the canteen through sickness, almost entirely respiratory infections. Also the fact that practically none of the women are able to breast-feed their babies in a country where breast-feeding is the rule is indicative of severe nutritional deficiency.

Deficiency Diseases

Large-scale investigation of the incidence of anaemia is impossible under war conditions. One average child receiving the extra relief ration was found to have a haemoglobin level of 40 per cent., an extremely low figure for a child. Dr. Ellis reports that he saw no typical pellagra in the Barcelona district, but that in the last six months the death rate from pellagra in Madrid is reported to have risen from one a month to thirty a month. He also saw no gross famine oedema, but puffy eyelids were a noticeable feature among the child population.

Professor J. C. Drummond, who attended a special conference to discuss relief organization, writes: "In Madrid the food shortage amongst the civilian population is so severe that it is stated that from 300 to 400 people die there daily of actual starvation. There is a good deal of hunger oedema. The troops are better fed, but there is a fair amount of night-blindness and very greatly decreased resistance to wound infections. So far there is no clear-cut scurvy, but there is a great increase in the incidence of rickets among children. In the south conditions are rather better, but no vegetables or fruit are available during the winter except in the country districts. In spite of this scurvy has not yet occurred. There is not the same degree of starvation in this area that there is further north. In Catalonia the starvation is pretty bad in spite of the relief measures, but the only very prevalent deficiency disease is rickets, which is almost universal in children under 3. In this area they appear to get certain green vegetables and tomatoes fairly regularly, and scurvy is not, therefore, causing any serious trouble. It is mainly a caloric and lime shortage."

Professor Drummond has prepared an analysis of the diets it was theoretically possible to provide for refugees before the recent advance on Barcelona. Together with the actual diets are given figures of the desirable intake of the different dietary constituents. Professor Drummond, throughout his reports, emphasizes the extreme importance of sending wholemeal flour in future.

The Position in November

The following statement about the food situation in Spain is taken from the Bray-Webster Report to the League of Nations made in November, 1938.

"All Republican Spain is suffering from acute food shortage. This shortage is due to the war; to the necessity for maintaining and equipping an army in the field; to the severance of Republican Spain from its inland districts of supply; to the air blockade of its ports, especially Barcelona and Valencia; the withdrawal of labour from the land, the effect of which will be increasingly felt in subsequent harvests; and to the great influx of refugees from non-Republican Spain, which has increased the normal population by 20 to 25 per cent. In consequence the Government has placed the whole population on minimum rations; supplies are uncertain, and with the exception of the daily bread ration of 150 grammes of bread, which hitherto appears to have been everywhere maintained, the rations actually obtainable often fall far short of the rations allotted on paper. While we were struck by the morale of the people, the effects of malnutrition are visible everywhere among the refugees and the poorest classes of the population, and it must become more acute with the passing of the summer sun and vegetation. The native civil population pays for its basic rations at fixed prices, but may supplement them within their means by purchase of a few commodities at the co-operative unions and what shops are still open. But stocks are meagre and precarious. It is no unusual thing for inhabitants of Barcelona to wait for hours in the market hall for an issue of, say, 100 grammes of fish, only to be turned away empty-handed for lack of supplies. . . . We are oppressed by the urgency as well as the magnitude of the problem. Even under the most favourable conditions it would take a considerable time to get any relief scheme into full swing, and the present private organizations, admirable as their work has been, cannot do more than touch the fringe of the problem. We hope they will receive increasing support, but we urge that no time should be lost in obtaining appropriate help from Governments, and especially from nations with surplus stocks of wheat, dried fish, skimmed milk, cocoa, and other essential supplies."

The gross calorie deficiency in the diets analysed by Professor Drummond is obvious, and except in Barcelona, where cod-liver oil is available for the children, the deficiency is alarming. The lack of calcium is also a serious danger in young children. Though theoretically the diets appear deficient in vitamin C, all observers report that scurvy, at least in an acute form, is not seen at present among the refugee population.

Nova et Vetera

A CROMWELLIAN MAJOR-GENERAL

We welcome the conclusion of the labours of Sir James Berry and Mr. Stephen Lee, who have been engaged for some time in the important task of writing a book containing all that is known concerning the career of Colonel James Berry, one of Cromwell's most trusted Major-Generals.* We also congratulate Sir James Berry upon having used so profitably his leisure time in retirement for the purpose of studies in the domain of historical research, where he has already shown considerable ability and enthusiasm.

Until Carlyle published in 1845 Cromwell's "Letters and Speeches" very little serious attention had been paid to the wealth of material in the Public Record Office, the British Museum, and other libraries. But in our time Dr. Gardiner and Sir Charles Firth have devoted their lives to an exhaustive study of this period, and have placed all students in the same field under a lasting obligation to them for the great work they have accomplished. Ample justice has been done by these great scholars to the dominant position occupied by Cromwell in the first half of the seventeenth century, and we need only mention the names of Carlyle, Gardiner, Harrison, Firth, Morley, and Buchan, who were his biographers, to show the great attention paid to that great Englishman.

While the military genius of Cromwell has had full justice done to it both here and abroad, his subordinates have only recently come into their own. Indeed, until a few months ago our literature lacked a biography of John Lambert, and yet that soldier has shown himself to be one of our great cavalry leaders, and has now found his place in the military annals of this country as the victor of Inverkeithing and as the organizer of the famous cavalry march from Leith to Worcester.

Colonel Berry was trained for war under the immediate eye of Cromwell, and was soon appointed to the important position of captain-lieutenant in Cromwell's own troop. He was with his leader at most of the battles in the great civil war, with the exception of Worcester, and he appears to have been a reliable cavalry leader. Besides performing with credit his duties as a cavalry leader, Colonel Berry was in much request in dealing with the political disputes which arose from time to time in the army, and in this respect he occupied a position of much importance.

But our chief reason for recommending this book as one worthy of the attention of students is that it gives for the first time, we believe, a clear and connected account of the work of a Cromwellian major-general, and the way in which Colonel Berry, at any rate, carried out his heavy duties. The story unfolded by Sir James Berry and Mr. Lee is taken largely from the Public Record Office, and we are glad they have drawn attention to the importance of the "King's Remembrancer Documents," which will well repay further examination. After Colonel Berry's life of danger and turmoil, it is comforting to be told that he lived on into the times of William III, and so enjoyed at last the principles of toleration for which he had risked his life.

A portrait of Sir William Butts, court physician to Henry VIII, has been chosen by the National Institute for the Blind for the cover of the latest desk pad in the series issued for the use of doctors by the Eichholz Clinic in Great Portland Street, W.

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* *A Cromwellian Major-General.* The career of Colonel James Berry, illustrated by his letters and other contemporary documents. By Sir James Berry, B.S., F.R.C.S., Hon. D.C.L., and Stephen G. Lee, M.A. Oxford: Clarendon Press. (15s.)

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THE PROFESSION OF NURSING

The evolution of nursing as a profession has been very different from that of medicine. The physician or surgeon has been essentially an individualist, associating with his pupils, apprentices, and assistants to their mutual advantage, but always reluctant to be part of a machine which is to any extent under the control of others. Nursing, on the other hand, in so far as it means more than the care and comfort of their kin which both men and women have assumed to be a womanly task, has mostly been a service since its genesis in religious orders. Nurses have been more accustomed to work as part of a team, their duties regulated by their superiors and their technical activities directed by the medical men or women in charge of the patients. In the literal meaning of the words they have been expected to take orders, and their training has been designed accordingly. Great stress has been laid on the vocational aspect of their work. Nursing, in fact, has been regarded less as a means of livelihood than as a calling. It is evident that Miss Nightingale, in her efforts to procure a professional training and status for nurses, still thought a sense of vocation essential in those who would pursue this occupation. A nurse will adjust herself more quickly to the unpleasantness of many of her tasks, to the mental and spiritual strain of contact with disease and death, and to the unreasonable demands made upon her by some of those who are in no state to govern their actions by reason, if she is endowed with patience and armed with the faith that drives people to sacrifice themselves in the interests of their fellow-beings. A sense of vocation derived from the possession of these attributes is a valuable qualification for nursing. But preoccupation with their own spiritual equipment is not a characteristic of the healthy-minded young persons whom the sick like to have around them, and its cultivation may lead to a vocational priggishness which has no professional or social value. Clearly the life of a nurse has its attractions as well as its repulsions. Apart from the satisfaction of doing work which is worth while, she enjoys the social life of the nurses' home if it is well conducted, the sense of being one of a working team, and the contacts with all varieties of human beings which gregarious men and women desire. In spite of what has been said and written about the conditions of service in hospitals, many women who have entered private nursing would gladly return to hospital if the prospects for their future were attractive and some of the defects of institutional management were removed.

In its interim report, summarized in our last issue, the Interdepartmental Committee on Nursing Services has addressed itself to the problems raised by some of these defects. The exigency is the shortage of nurses, striking examples of which are given in the report. This is not due to a decline in the number of women entering the profession. If entries for the preliminary State examination be taken as a very crude measure the numbers are found to have risen, with some fluctuation, from 5,984 in 1926 to 9,624 in 1937: an increase of more than 60 per cent. in twelve years. The demand, however, far exceeds the supply, partly because of the growth of hospitals, partly from the increasing complexity of modern technique in treatment, but very largely for two reasons—namely, the managerial and staffing reforms of the municipal hospitals since 1930, and the efforts which all types of hospital have been making to shorten the hours of work of nurses and to reduce the strain upon them. In fact the attempt to remove one of the obstacles deterring desirable entrants to the profession has accentuated the immediate demand. The annual requirement, at least for some years, is estimated to be 12,000 probationers, and this at a time when the number of girls reaching the age of entry is steadily falling. The urgency of the situation has led the committee to emphasize the national character of the service rendered by nurses, to point to the relatively poor financial prospect of most of those who qualify, and to advocate that subsidies from public funds should be made to the voluntary hospitals so that they may pay their nursing staffs at standard rates, settled by means similar to those applied to the salaries of school teachers. Probably the expectation of reasonably attractive salaries throughout the working years of life would do more than anything else to overcome the present and impending shortage.

Something must also be done about the wastage of probationers, to which both the *Lancet* Commission and the Interdepartmental Committee have drawn attention. Apparently 20 to 30 per cent. of entrants leave their training schools without completing even one year. In some hospitals the loss is greater than this. While some of these girls are certainly quite unfitted by temperament or physique for nursing, the high proportion suggests that hospitals have unjustifiably expected a sense of voca-

tion to counteract any dissatisfaction with the conditions under which their probationers labour. Florence Nightingale, it would appear, envisaged the training school for nurses as something distinct from the hospital, though attached to it, and this idea has been applied at certain centres in America, notably at Yale University. In British hospitals the probationer is a worker and a student in one. Indeed, the motive of some hospitals for obtaining recognition as training schools may be more to attract a good type of woman as a worker than from any educational urge. Parents undoubtedly hesitate to send their daughters into hospitals where labour is more in evidence than study and the reward is not commensurate with the service given; and the discovery of the true state of affairs may account for the failure of some of the entrants to proceed with their training. But it is very undesirable that nursing should be perverted by too academic an approach. The qualities and resource of the trained nurse are too patent in comparison with her recently fledged medical counterpart to lead us to advocate for her that divorce from the right kind of apprenticeship from which our own undergraduate curriculum suffers. But the anxieties and stress put upon young women driven to be responsible workers while they ought to be regarded purely as learners are certainly among the reasons for the wastage to which we have referred. The Interdepartmental Committee no doubt had this question in mind when the majority recommended that, in addition to the contribution toward salaries, State grants should be made to all training schools, whether voluntary or municipal. The idea underlying this recommendation may be elaborated in the committee's promised final recommendations, and the statistical inquiry, mentioned in the present report, may afford more complete information as to the extent and nature of the problem. In the meantime acceptance of the committee's proposals for registration and control of co-operations and of assistant nurses would at least reduce the attractions of the lucrative unqualified practice to which some of the defaulters now gravitate.

NEONATAL MORTALITY

Neonatal mortality has recently been considered by Yerushalmy[1] in relation to order of birth and age of parents. The material upon which this interesting study was based comprised all the 82,140 births in the State of New York, exclusive of the City, during the year 1936. Of these infants 2,563, or 31.2 per 1,000 live births, died before they were 1 month old. First-born infants, as well as those who were born late in a large family, had a considerably higher mortality than intermediary births, and this mortality took on a sharp rise from the fifth birth. Prematurity was by far the most important factor in neonatal deaths, for more than half of these deaths occurred among premature infants, while of those surviving the first month only 3 per cent. were premature. Prematurity was most frequent among first births, after which it fell until the fifth birth, when it began to rise again. As compared with infants born at full term, the prematurely born infants had a very poor survival rate, their mortality being twenty-five times as high. The handicap of being first-born was also well marked for full-term births, the death rate being 44 per cent. higher than the rate for second births. Throughout the whole range of births the neonatal mortality for males was always higher than that for females.

The mortality of infants born to very young mothers and to older mothers was considerably higher than that of infants born to mothers whose ages ranged from 20 to 30 years, the lowest mortality rate of all being for infants born to mothers between 27 and 30 years of age. The same trend of mortality by age of mother was observed in practically every order of birth, starting high for young mothers, dropping to a minimum, then rising to very high rates in the case of older mothers. The conclusion drawn by the author from this analysis is that neonatal mortality is independently correlated with the two factors, order of birth and age of mother. Taking neonatal mortality figures as a measure of the vitality of the infant, a table is drawn up showing that the fittest infants are born as first births to mothers of 21 to 26, as second births to mothers of 23 to 28, and so on up to tenth and over to mothers of 36 to 41 years of age. A further analysis showed that the age of the father was not without its influence. This effect was not due to the high correlation that exists between the respective ages of father and mother, for when the age of the mother was kept constant the variation in neonatal mortality was very pronounced and its course followed that of the maternal curve—that is to say, it started high for very young fathers, dropped to a minimum, and rose again as age increased. Just as the optimum age for mothers was found to be 27 to 28, so the optimum age for fathers worked out at 25 to 29 years. With regard to stillbirths, it was found that the variations had a closer relation to the age of the mother than to the order of birth; nevertheless the rate for first births was considerably higher than the rates for the other orders of birth in every age group. In this connexion, however, it must be noted that in New York State a

[1] *Amer. J. Hyg.*, 1938, **28**, 244.

stillbirth must be registered as such if the foetus has advanced to the fifth month of gestation and shows no evidence of life after birth. This accounts for the comparatively high number of stillbirths included in the study—namely, 2,375, which gives a stillbirth rate of 28.1 per 1,000 live births.

Locality was not without significance, for premature births were more frequent in urban communities than in the rural parts of the State, but, on the other hand, the mortality was considerably higher in rural areas than in the cities. As might be expected, illegitimate births and plural births yielded much higher rates than those recorded for legitimate and single births, particularly in regard to prematurity. Thus the prematurity rate was 87.4 for illegitimate births and 259.1 for plural births. The stillbirth rate for premature infants was 249 as compared with 15.1 for full-term infants. The reduction in infant mortality during the past two decades is strikingly expressed in the brief statement that "in 1915 it was above 100, to-day it is below 50," but the decrease in mortality is chiefly apparent in the age period 1 month to 1 year, where it is twice as great as in the age period of under 1 month. It is on this early period, and on the factors influencing the health of the mother during gestation, that attention should be concentrated in the future. It is the saving of life at its very beginning that is now the major problem.

INSULIN THERAPY OF SCHIZOPHRENIA

In a recent number of the *Psychiatric Quarterly*, devoted almost exclusively to a number of American reports on the results of the insulin treatment of schizophrenia, Malzberg[1] has compared the immediate results in 1,039 cases of schizophrenia in New York hospitals with those obtained without such treatment in a similar number of control cases admitted in 1935 and 1936. The comparison is striking. Those treated with insulin were in many ways a less favourable selection, having among them a number of old cases. The controls were all first admissions, and consisted, therefore, principally of fresh cases. Nevertheless there were 12.9 per cent. of complete recoveries in the insulin group, as against 3.5 per cent. in the control group. If all degrees of improvement were counted the improvement rate in the treated cases was 65.4 per cent., compared with 22.1 per cent. in the controls. The fears which may have been felt that the benefits of insulin treatment may have to be paid for by an increased death rate do not appear to be justified. The death rate was actually lower in the insulin group (12.5 per 1,000) than in the control group (46.2 per 1,000). These figures are not strictly comparable, since the control group was observed for a longer period and the insulin group represents a selected series; naturally persons physically ill would be excluded from the latter. Allowing for these factors Malzberg considers that the death rates in the two groups would prove about the same. Although insulin treatment must be compared to a major operation in the skill and attention demanded, yet its risks are not frightening, and since its benefits often include a noteworthy physical improvement, even in cases which do not improve much psychologically, it may obviate a number of deaths from debility, tuberculosis, and other causes. As to the type of the psychosis and the outcome of treatment, Malzberg finds, as was indeed to be expected, that the prognosis is worst in hebephrenic cases, both with and without insulin treatment. Even so, shock therapy gives as great a relative improvement on the results previously obtained in the hebephrenic as in the other groups. These findings are paralleled by those of Ruffin,[2] who in the treatment of 100 cases observed no improvement at all in hebephrenic cases. His findings show that the more florid the psychosis, especially if it is of the paranoid type, the better does it react to insulin, and that this criterion is of greater value in assessing the probable result of treatment than is the mere duration of the disease. Most writers on the insulin treatment of schizophrenia are convinced of its usefulness. Even those who are critical and cautious to the point of being pessimistic—for example, Horány-Hechst and Szatmári,[3] and Marzynski and Witek[4]—would not regard the treatment as without avail, and when the results obtained by these latter workers are examined such considerable success is shown that the authors in question might be suspected of excessive caution or of undue optimism about what is obtainable without insulin. Careful follow-up studies of treated and untreated cases are, however, necessary before a final assessment can be made of the results of the new therapy.

[1] *Psychiat. Quart.*, 1938, **12**, 528.

SAFEGUARDING WATER SUPPLIES

Prevention of water-borne diseases formed the chief and almost the only concern of sanitation as it was understood a hundred years ago. Recent events have shown that even to-day it can be achieved only by careful and constant supervision of supplies of drinking water, and in this task effective collaboration is needed between the various officers responsible for the work and also between the water undertakers and the local authorities of areas served by them. A memorandum on the precautions necessary in the day-to-day administration of a water supply in order to maintain its wholesomeness has now been issued by the Ministry of Health. These precautions are no more than have long been recognized as good practice in water administration, and the Minister asks that the practice shall be brought up to this standard everywhere. An essential safeguard is care in the choice of workmen employed on any works where there is risk of conveying infection to the water. The clinical history of each workman,

[2] *Nervenarzt.*, 1938, **11**, 518.
[3] *Mschr. Psychiat.*, 1938, **98**, 101.
[4] *Z. ges. Neurol. Psychiat.*, 1937, **159**, 704.

particularly with regard to enteric infection, should be thoroughly investigated. Every new workman proposed to be employed on any part of the works where there is risk of his contaminating the water should be examined in order to ascertain whether or not he is likely to be a typhoid carrier. All buildings, machinery, apparatus, and yards used for waterworks purposes should be kept scrupulously clean and regularly inspected. Where the source of water is a reservoir impounding the head waters of a stream or an intake near the source of the stream the water undertaker should acquire the whole of the gathering ground and protect the reservoir or intake by adequate fencing, but if this is not practicable regular and frequent inspections of the whole gathering ground should be carried out. Where water is being supplied without treatment the undertakers should make frequent and regular analyses of the water. The analytical procedure will depend upon local conditions and should be determined in each case with the advice of experts. The safeguarding of water supply by special treatment such as chlorination requires the greatest care.

"There is often a tendency to think that, provided arrangements are made for chlorination, safety is secured whatever the condition of the raw water. It cannot be sufficiently stressed that a policy of reliance on a single line of defence between the consumer and a polluted source of water supply is fraught with danger. Not only should every effort be made, as has been suggested above, to keep the source as free as possible from pollution, but wherever practicable the method of treatment should be such as to provide at least two lines of defence, such as, for example, chlorination or other effective form of sterilization, after storage or filtration."

The memorandum also deals with the care of mains and hydrants and the safeguarding of the water supply during repair or cleaning. Where work is proceeding in a well or in a heading the water should, whenever possible, be cut out of supply and pumped into waste. Workmen should be provided with boots and overalls kept at the works, and the boots should always be cleansed with chlorinated water before the men enter the well. Proper sanitary accommodation should be provided for the men so as to obviate risk of pollution.

RESEARCH IN HUMAN HEREDITY

In various research fields those engaged find it helpful to get in touch with other workers in the same subject. In genetics the army of workers on drosophila, mice, and maize have for some time now been helped by setting up an information service. The Council of the Bureau of Human Heredity is following this example. Such information is necessarily intended only for co-workers, and the plan of the service is as follows: Research workers are invited to send an intimation of the subject or subjects on which they are engaged to the office (not exceeding 100 words). This should be accompanied by a subscription of 5s. The material so collected is issued as a printed bulletin in three languages to subscribers only. Addresses of contributors are given with the date of their communication. This last point safeguards priority. The office at 115, Gower Street, London, W.C.1, is about to compile Bulletin No. 2, and has already received information from many research institutes as well as individual workers abroad. The honorary officers of the Bureau invite co-operation from those interested in particular studies of human genetics in this country.

SYPHILIS FROM TRANSFUSION

The report in our present issue (p. 264) by J. A. W. McCluskie of a case in which syphilis was undoubtedly transmitted by transfused blood must arouse some disquiet. In both this and two other cases reported within the past few years, to which he refers, the donor's chancre did not develop until some days after the transfusion took place. The presence of *T. pallida* in the circulating blood is an amply demonstrated and universally recognized feature of the secondary stage, but that this condition can exist before even the primary lesion is clinically manifest may be found surprising: it is nevertheless fully consonant with experimental observation, which has shown that the organism reaches neighbouring lymph glands from the point of inoculation with all the rapidity which might be expected from its capacity for rapid movement. The visible lesions of syphilis are in fact only the culmination of a process which has been going on silently for a considerable time. It is certainly desirable, as Dr. McCluskie suggests, that we should know whether the medication of blood will sterilize it for purposes of transfusion: there is a reasonable expectation that this could be achieved. Unfortunately this does not appear to solve the problem, because it would scarcely be feasible always to take this precaution against a risk which is exceedingly rare. To expect donors always to decline to act for a month after irregular intercourse has obvious drawbacks, nor would it be wise to try to bind them to absolute chastity. Only one of the donors concerned in these three cases was a habitual donor, and when such disasters occur a relative is much more likely to be the culprit, especially since there may on occasion be no time for any precautions to be taken other than by the asking of questions. Although it is conceivable that an action for damages might be brought on these grounds, it is so clearly impossible to detect this remote risk that the action might perhaps be successfully defended on that basis.

REFUGEES AND RESEARCH

We print elsewhere (at p. 303) an appeal from Professor Major Greenwood on behalf of the Society for the Protection of Science and Learning (formerly Academic Assistance Council). In these times the claims upon our charity are so numerous that any fresh demand is irksome: if we cannot be the police force of the world neither can we be almoners of civilization. But the position of this society is unique. As Professor Greenwood points out, it is in no way concerned with the extremely difficult problem of foreign medical practitioners; it assists only pure scholars and scientific

workers. Some of our older readers may remember the presidential address of the late Dr. G. B. Ferguson at the Annual Meeting of the Association in Cheltenham in 1901, one of the most eloquent orations in our series. It was a plea for the encouragement of research in medicine. A Faraday, a Koch, or a Pasteur, he said, would be a cheap purchase at a million. Much has happened in the last thirty-eight years: medical research is no longer a Cinderella. But it is true that recent political events have thrown upon the world men of ability far above the average, and that in supporting the Society for the Protection of Science and Learning we not only advance the general cause of science but facilitate the growth of British and Imperial schools of higher learning and scientific research.

PAIN IN PEPTIC ULCER

To overcome the possible errors of applying the results of experimental observations on animals directly to clinical medicine there have been many attempts to cultivate the study of human physiology and pharmacodynamics. The difficulty has been to devise methods of registering the results. One of the most fruitful of these methods has been the observation of muscle tone and contraction of the hollow viscera under physiological conditions and following the use of drugs, by placing in the viscus partially distended balloons connected with a recording apparatus—the experimental method known as "viscerography." Morat recorded the gastric contractions of a patient in this way, and Carlson made similar observations on the fasting stomach of infants. Cannon, by means of balloons in the oesophagus, showed the muscle tone of this tube in relation to hunger, while in this country Payne and Poulton recorded the muscle tone and contraction of the gullet in swallowing and observed that pain was produced by distension. Professor Danielopolu[1] of the Faculty of Medicine of Bucarest and his students have applied this method for the past twenty years in a large series of experiments on patients, thus exploring the gullet, the stomach, the duodenum, the rectum, and the bladder. Although the mechanics of their method might well be improved, since the lag and overswing of levers attached to rubber tambours produce quite artificial curves, the general results are interesting and important; and with improved technique much useful knowledge and record of clinical conditions should be obtained. Three of Danielopolu's assistants have carried out by the same method a study of gastric pain.[2] A sound with balloon attached is introduced into the stomach, the balloon is partially distended, and the free end of the tube is connected with a tambour and lever so that the movements of the stomach compressing the balloon are recorded on a moving surface. Danielopolu had in 1923 shown in this way that the pain of a gastric crisis in tabes was related to hypermotility of the stomach muscle, and the majority of authors attribute the pain of peptic ulcer to hypercontractility and hypertonicity of the stomach. Others, however, have incriminated gastric hyperacidity. To settle this question, and to find out why the pain is so often intermittent, coming in attacks and leaving the patient free sometimes for weeks or months, was the problem of Dimitriu, Tanasoca, and Popovici. Their observations were made on forty cases of gastric ulcer confirmed radiologically. They regard it as established that the seat of the pain is in the diseased mucous membrane; the absence of pain can therefore only be explained by absence of acute inflammation. Indeed, in eighteen cases of ulcer in the stage of intermission they were unable to produce pain either by intense distension of the stomach, by injections of eserine or pituitary extract intravenously or of histamine subcutaneously, all of which brought on strong peristaltic waves, or by the introduction into the stomach of dilute hydrochloric acid in concentrations of 0.5 to 4 per cent. They conclude that the pain of peptic ulcer depends on three factors: one predisposing, depending on the inflammatory lesion of the mucous membrane; and two determining the contractility of the stomach and the acidity of the gastric juice. The factor of inflammation is indispensable, and in its absence pain cannot be evoked. Of the other two factors contractility is the more important and may in itself produce pain, as it undoubtedly does in cases in which subacidity or even anacidity accompanies peptic ulcer.

[1] *Brux. méd.*, 1938, **18**, 819.
[2] *Presse méd.*, 1938, **46**, 610.

POLYCYTHAEMIA VERA

Three recent papers on polycythaemia vera present different aspects of this interesting, if uncommon, disease. Rosenthal and Bassen[1] have studied a group of seventy-five cases in order to draw a complete picture of the disease. In the early stage it may be asymptomatic and be discovered when the patient appears for a routine examination. A red cell count of 8 million may be compatible with a feeling of absolute well-being. Later the patient presents such symptoms as headache, dizziness, weakness, paraesthesia, a ruddy complexion, and redness of the hands and feet. In about 75 per cent. of the cases the spleen is enlarged, and the liver in about 50 per cent. The blood pressure is often normal, but generally it is moderately elevated and in some instances there is pronounced hypertension, the so-called Geisboeck form. Haemorrhage and thrombosis are frequent complications and may bring the illness to a premature conclusion. The duration of the polycythaemia phase may be long, possibly ten to twenty years, and long remissions may follow successful treatment. Not infrequently it is easier to reduce the haemoglobin than the red cells, so that the colour index falls and the cells appear small and pale, though their total number remains high. This may be regarded as the result of treatment, but there are other complications which appear to be inherent in the disease. Such are thrombocythaemia, with increased risk of thrombosis of vital vessels, and polynucleosis, which may pass into a state indistinguishable from leukaemia. These complications are associated with the proliferation of megakaryocytes and immature white cells in the marrow, where leucopoiesis in fact is always more striking than erythro-

[1] *Arch. intern. Med.*, 1938, **62**, 903.

poiesis. In one of Rosenthal and Bassen's cases, a woman who had polycythaemia for thirteen years, the proliferation in the terminal leukaemic phase was so exuberant as to produce large tumour-like masses, both medullary and extramedullary, which were found to be leukosarcomatous. Should the patient survive these phases the disease tends to spend itself and to end in anaemia with sclerosis of the bones. In all this there is a strong likeness to the erythroblastic and megakaryocytic leukaemias to which we have referred in a previous annotation (November 26, 1938, p. 1090). Sohval[2] discusses the hepatic complications, with particular reference to thrombosis of the hepatic and portal veins and hepatic cirrhosis. While moderate enlargement of the liver is frequent, marked enlargement suggests a complication such as phenylhydrazine jaundice, cirrhosis, etc. A sudden enlargement of the liver with rapid accumulation of ascites, resistance to mercurial diuretics, and terminal jaundice points to thrombosis of the hepatic veins. Haden[3] emphasizes once again the importance of distinguishing polycythaemia vera from symptomatic polycythaemias due to an interference with oxygenation of haemoglobin, in which abstraction or withdrawal of blood would be harmful. The total red cell mass, as determined by estimation of the blood volume, is constantly high in polycythaemia vera and not significantly changed in symptomatic polycythaemia, and treatment should therefore be based on this finding.

PROTEIN CHEMISTRY

The nature and organization of protoplasm is the chief unsolved problem in biology, and hence it may fairly be argued that the physical chemistry of proteins is a problem of unique importance. The outstanding difficulties attending the study of proteins are well known; these substances are very easily denatured by chemical treatment, whilst chemical analysis provides little help because the properties of proteins depend on the pattern in which the constituent amino acids are arranged. These formidable difficulties have acted as a stimulus to physical chemists, and the problem has been attacked by a remarkable variety of methods. An account of the varied work on the subject is provided in a volume recently published.[4] The earlier methods used were study of osmotic pressure, electrophoresis, action of proteins on surface tension, etc. Progress in the study of monomolecular films gave a new method which has yielded results of great interest, while development of the ultracentrifuge and of the technique of preparing ultra-filters with varying sizes of pores have jointly provided a fairly reliable estimate of the molecular weights of proteins. Analysis by *x* rays has advanced knowledge in another way by indicating the probable nature of the arrangement of the constituent parts in certain proteins. These very varied and delicate techniques together have furnished definite indications regarding the probable form of protein molecules. Miss Wrinch, by means of a happy combination of mathematics and imagination, has actually provided models of the possible structure of proteins based on the cyclol theory. These speculations explain a large number of experimental facts and have proved fruitful in inspiring further experimental work. One reason why the subject of protein chemistry is of special interest to-day is that virus research has elaborated proteins in crystalline form which possess many properties hitherto looked upon as attributes peculiar to living matter. Hence, if we possessed an adequate knowledge of the physico-chemical nature of ordinary "dead" proteins we should be in a position to begin to explain some at least of the fundamental properties of the living cell.

[2] *Arch. intern. Med.*, 1938, **62**, 903.
[3] *Amer. J. med. Sci.*, 1938, **196**, 493.
[4] *The Chemistry of the Amino Acids and Proteins.* Edited by Carl L. A. Schmidt, M.S., Ph.D. Baltimore: Charles C. Thomas. (7.50 dollars.)

NUTRITION IN CHILDHOOD

Sir Frederick Gowland Hopkins, Dame Janet Campbell, Sir Daniel Hall, Lord Horder, Mr. Julian Huxley, Dr. Eric Pritchard, Sir Robert McCarrison, and Sir John Orr are among those who are asking for public support for the Children's Minimum Council. In a pamphlet describing the aims and work of the council they plead for a national drive for improved nutrition, with special emphasis on the protective foods, milk and green vegetables. "By making a proper diet available during the years of growth," they say, "we could eliminate much disease and disability and we could give to the children of this generation the opportunity of 'positive and abounding health' which is now denied to all but a small minority." This, they claim, "is not a task for short-term philanthropy, but for popular endeavour towards a happier and healthier nation." The Children's Minimum Council has kept the public alive to the problem of malnutrition, and it has succeeded in mobilizing a strong body of support behind its proposals for bringing an adequate supply of milk within reach of all children, for extending the provision of school meals, and for raising the allowances for the children of the unemployed. In these directions it has already made some headway, but much more remains to be done. The council's object is "to ensure that no child shall, by reason of the poverty of its parents, be deprived of at least the minimum of food and other requirements necessary for full health." All those who accept its aim are asked to associate themselves with a movement to ensure the foundation of physical fitness. Copies of the pamphlet can be obtained, free of charge, from the Children's Minimum Council, 72, Horseferry Road, London, S.W.1.

The views of the medical profession on the importance of a safe milk supply to the national health were conveyed by a deputation representing medical organizations, which was received by the Minister of Health and the Parliamentary Secretary to the Ministry of Agriculture on Wednesday, February 8. The organizations represented were the British Medical Association, the Royal College of Surgeons, the Royal College of Physicians, the Society of Medical Officers of Health, and the Joint Tuberculosis Council.

SURGICAL PROCEDURES IN GENERAL PRACTICE

This is one of a series of articles contributed by invitation

PROSTATECTOMY AND ITS POST-OPERATIVE MANAGEMENT

BY

SIR W. I. de C. WHEELER, M.D., F.R.C.S.I.

The success or otherwise of post-operative treatment depends upon the efficacy of pre-operative measures and upon the operative procedure. It will therefore be necessary to allude briefly to both the latter when discussing the former. It will not be possible to discuss the wide variations of treatment which are required after procedures such as the Harris complete closure operation, endoscopic resection, or operations performed through the perineal route. Attention will be directed to open operations of the orthodox type.

General Considerations

The surgery of the prostate gland as we know it had its birth in or about the year 1887. At this time McGill of Leeds read a paper on suprapubic prostatectomy. In those early days surgery was judged largely by the speed of operation. Onlookers in the operating theatre instinctively stood with one eye on the clock. Manual dexterity was of a high order, and in every department the Science of surgery was subordinated to the Art. Major amputations were completed in a few minutes. It was emphatically laid down that operations such as lithotrity must not occupy more than four minutes for the "first sitting." Prostatectomy was performed by pioneers such as Freyer with a celerity that has never been excelled. Speed must still be the watchword in conditions of danger and emergency, but the cost may be heavy in the form of post-operative complications, immediate and remote.

Elderly patients are not necessarily bad surgical risks. They tolerate well such major operations as amputations, gastrectomy, and colectomy. It is recognized, however, that those advanced in years require the most detailed care in the pre-operative and post-operative periods. This point is, I think, made clear by the statistical figures collected by the late Sir John Thomson-Walker and other authorities. Wide variations in results following operations by expert surgeons are reported. These variations can be explained only by assuming that some surgeons were in a better position than others to give close personal attention to pre-operative and post-operative care.

In a series of 472 cases in private practice Thomson-Walker's mortality was 5.2 per cent. Comparable statistics in hospital practice revealed a rise in this figure to 9.9 per cent. The figures obtained from hospitals further afield demonstrated a death rate as high as 20.4 per cent. following a single-stage operation, with a reduction to 17.4 per cent. when the two-stage operation was employed. Harris was insistent on the necessity for scientific pre-operative and post-operative care and upon asepsis of a high order.

He published a large series of cases with a mortality of only 2.7 per cent. In the Mayo Clinic, mortality following endoscopic resection approaches the figure of 1 per cent.

The results of his open plastic operation published by Harris are so impressive that his teaching is worthy of study. It has been fully published. His observations concerning one fatal case illustrated the direction of his thoughts. "This last patient," says Harris, "had had a preliminary cystotomy six weeks before the prostatectomy. There had been a number of small pustules below the fistula which were slow to heal. These were touched with pure carbolic acid, and the area of skin containing them was excised during the skin incision. His wound broke down and he developed a general pyaemia. This is a valuable example of the inadvisability of ever carrying out a prostatectomy until all conditions are as favourable as they can be made." Harris attached great importance to the indigo-carmine test of renal function. Whatever other tests revealed, he would not operate unless a distinct blue coloration of the urine appeared within ten minutes of the intravenous injection.

There is one obvious pitfall where some of us have stumbled in dealing with cases of prostatic obstruction. It is not sufficiently realized that multiple pathology is the rule and not the exception in elderly patients. I have seen patients either alarmed or exhausted to such an extent from troubles with micturition that symptoms indicating the presence of disease elsewhere were concealed or forgotten. Apart from the large percentage of cases with cardiovascular disease resulting directly from prostatic obstruction, there are others with remote lesions such as cancer of the stomach or colon, disease of the central nervous system, glycosuria, active pyorrhoea, or other morbid conditions. If such escape recognition the treatment of urinary obstruction may be misdirected or futile.

Operation

The details of operative technique are outside the scope of this communication, but in Fig. 1 a simple manœuvre is illustrated which lessens the chance of contamination of the operative field from the contents of the bladder. The latter is opened by the introduction of Kidd's trocar and cannula. Through this the terminal portion of a close-fitting aspirator is introduced. When the bladder is completely emptied by suction the trocar and cannula are removed and the opening in the bladder enlarged sufficiently for the completion of the operation. Kocher's goitre forceps (Fig. 2) has been found a convenient instrument for grasping the prostate during an open operation or when it lies free ready for removal from the cavity of the bladder.

Post-operative Management

The necessity for forcing fluids and thus promoting diuresis is accepted by all. During operation two to four pints of normal saline solution may be given into the tissues of the axilla by means of Lane's bag. The fluid is usually absorbed within an hour, during a period when it cannot conveniently be administered by any other route. If the patient has some distance to go from the operating theatre to bed it is well, in the transit, to protect his respiratory passages from the colder air by covering his face loosely with a warm blanket. The foot of the bed should be raised two feet, and ¼ grain of morphine given hypodermically.

Assuming the patient has not been unduly shocked, haemorrhage is the one serious complication to be feared at this stage. Bleeding after operation occurs more

often in patients with a low blood pressure, and the lower the blood pressure the greater is the possibility of thrombosis and pulmonary embolism. Haemorrhage is an infrequent occurrence after any of the modern one-stage operations, and it seldom gives trouble when the two-stage procedure is employed. If it does occur, then treatment must be prompt. Signs are unmistakable: the pulse rate rises, blanching is pronounced, restlessness increases, and

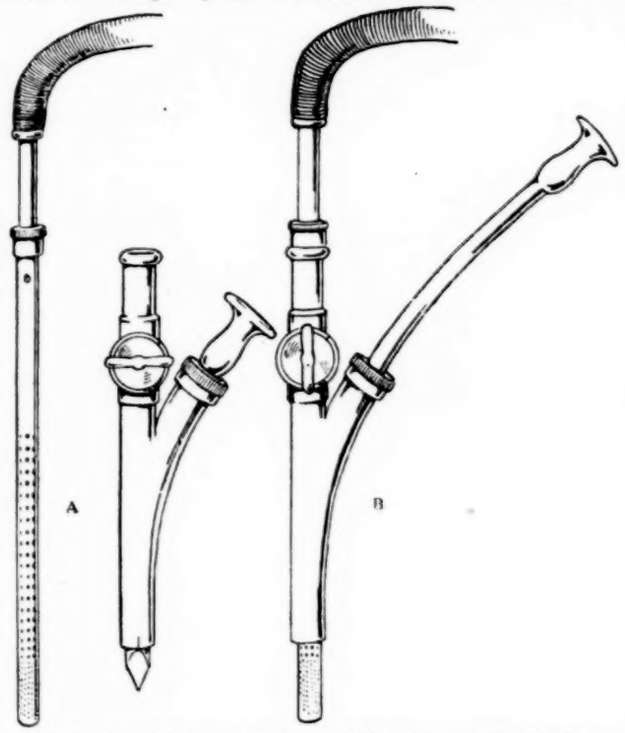

FIG. 1.—A: Suction terminal and Kidd's trocar and cannula. B: Suction terminal in position.

bladder spasms with the extrusion of red clots from the tube are continuous. In the presence of such signs and symptoms the prostatic cavity must be packed without delay. The drainage tubes are removed, and under gas-and-oxygen anaesthesia the bladder is quickly emptied of clots with gauze and forceps. The vesical end of the indwelling catheter (if used) is caught with the fingers and pulled well into the bladder. With this as a guide,

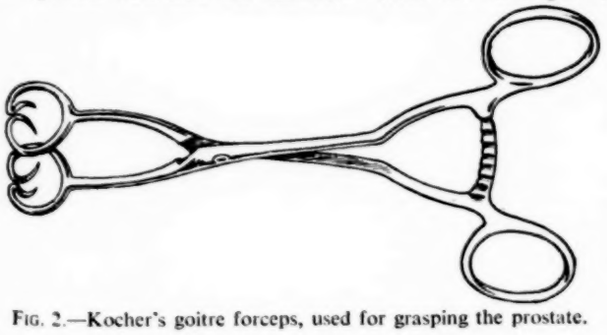

FIG. 2.—Kocher's goitre forceps, used for grasping the prostate.

iodoform gauze is packed into the prostatic cavity by aid of the first finger. The catheter is pulled down into position with the eye lying just above the centre of the gauze packing. The suprapubic tube is replaced, and a further injection of morphine given when necessary. Continuous irrigation of the bladder by a fast drip of silver nitrate solution (1 in 10,000) is indicated. The packing is removed in from twelve to twenty-four hours. Apart from alarming haemorrhage, continuous daily oozing of blood during the first week may give rise to anxiety. This is usually controlled by continuous irrigation, but if it persists and the patient appears to lose ground the prostatic cavity must be packed and a large suprapubic drainage tube reintroduced.

The danger of haemorrhage after prostatectomy is not finally passed until after the tenth or twelfth day. The bladder at this time is becoming stretched *pari passu* with the closure of the suprapubic wound. Once again it may become necessary to reopen the original drainage tract and, if the bleeding continues after this renewed drainage, the prostatic cavity must be packed. In severe bleeding transfusion may save life. An intramuscular injection of one or two ounces of whole blood may be given at once as a haemostatic, as no typing is required. I have never used the Hagner, Pilcher, or other haemostatic bag, but some surgeons employ one of these or the Andrews tube as a routine.

Uraemia

The patient may be potentially uraemic at the time of operation, as shown by laboratory tests of renal function or clinical signs. When pre-operative treatment has failed to restore good renal efficiency a two-stage operation is indicated. In such cases, however, simple suprapubic drainage may prove fatal unless catheter drainage is previously employed. Post-operative uraemia need not be feared when the urea-concentration test before operation gives a figure of not less than 2 per cent. If there are misgivings at the time of the operation as to the maintenance of renal function during the subsequent days it is best to take Time by the forelock and install an intravenous drip of 5 per cent. glucose solution into the internal saphenous vein in front of the malleolus. By choosing this vein the patient's arms are left free. As a precaution against a sudden jerk or flexion of the leg during sleep a clove hitch should be loosely applied round the ankle and tied to the end of the bed. Glucose solutions are employed not only for their diuretic properties but also because they act directly on the heart and supply glycogen to the liver. If uraemia is established or is still threatened, one of the most powerful diuretics is a solution of sodium sulphate (Dick, 1933–4). Dick recommends the solution, and prepares it by dissolving 42.85 grammes of Glauber's salt in one litre of water. Two litres are administered by the drip method, and are repeated if necessary.

Post-operative Collection of the Urine

The usual routine is to employ the Hamilton Irving box or one of its modifications over the suprapubic tube. The tubes from this apparatus are carried under the thighs to a bottle beside the bed. Crystals of boric acid are wrapped in gauze and placed within the box. The latter is removed and boiled each day, and is replaced after a liberal smearing of the skin in the suprapubic region with warm sterile petroleum jelly. The bladder is irrigated through the indwelling catheter once or twice daily with silver nitrate solution, weak permanganate solution, or sterile water. As already stated, continuous irrigation is indicated when bleeding is troublesome, but it may with advantage be employed in other cases, especially when infection is found difficult to control.

Suction Drainage

For many years I have not employed such appliances as the Hamilton Irving box. A water or steam suction tap is installed by the bedside of hospital patients, and a silent electrically driven suction engine (the Lovac) is employed in private work. After a little instruction and practice the average nurse becomes accustomed to this

method. Not only is the patient kept dry, but the bladder and the prostatic cavity are more effectively drained, and I believe that the incidence of many post-operative complications is reduced. A paper by Fish on mechanical drainage in surgical urology (Fish, 1931) described the advantages of suction over other methods as observed in the Squier Urological Clinic in New York. The paper deals with a large series of cases treated with and without the use of post-operative suction. "In the suction group," says Fish, "the patient was dry and comfortable, to say nothing of a very considerable saving of dressings, linen, and nursing care." A bent glass tube, smaller in diameter and slightly shorter than the suprapubic drainage tube, is placed in the latter (Fig. 3). The glass tube is connected to an aspiration bottle, which is in turn connected to the water-tap

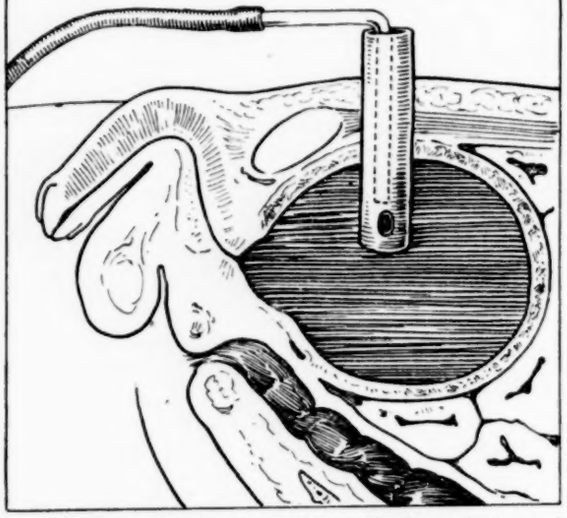

FIG. 3.—Suprapubic tube in position, with glass tube inserted for connexion with suction apparatus.

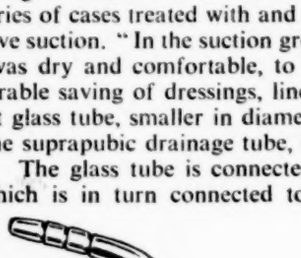

FIG. 4.—Giles's tube.

suction or electric engine. Open suction is thus maintained for about five days. The suprapubic tube is then removed, and suction is continued through a small metal tube (Giles's, Figs. 4 and 5). This latter does not enter the bladder; it passes through the more superficial portion of the fistula. Suction is continued through this tube for another five or six days. The suprapubic drainage is then discontinued, and the indwelling catheter is connected with a bottle at the bedside until healing is complete. Fig. 6 illustrates continuous suction by means of the electric engine. Continuous irrigation of the bladder is also shown, and glucose solution is seen entering the internal saphenous vein by the drip method. (The receptacles hang from a portable frame of the Balkan variety supplied by Messrs. Gardner of Edinburgh. The detachable cross-bars for suspension and traction in fracture work are omitted.) Thomson-Walker drew attention, in his Lettsomian Lectures in 1930, to the widespread belief that an indwelling catheter and continuous irrigation after an operation are difficult measures to apply and will cause haemorrhage and epididymitis. His work and the experience of others have proved the contrary. These troubles, like many other complications, are attributable often to inadequate asepsis before, during, and after operation.

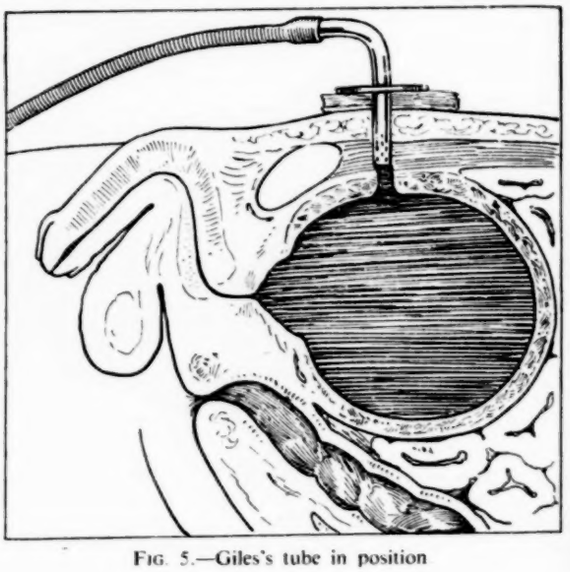

FIG. 5.—Giles's tube in position

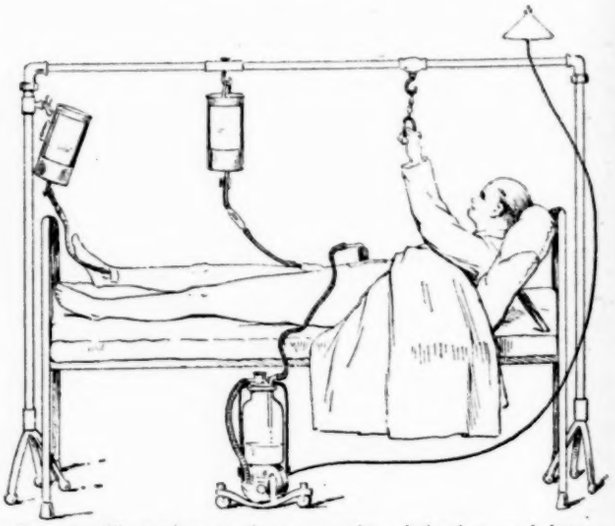

FIG. 6.—Illustrating continuous suction, irrigation, and intravenous drip

The Indwelling Catheter

The indwelling catheter is commonly employed from the time the patient leaves the operating theatre until the suprapubic wound is soundly healed. Some surgeons use it for both irrigation and subsidiary drainage. Suprapubic and catheter drainage employed simultaneously is, however, often irksome to the patient, and makes nursing more difficult. It is sufficient as a rule to close the end of the catheter with a spigot and to use it only for irrigation. When the suprapubic wound has almost healed catheter drainage for a few days will complete the closure. When the catheter is introduced before the patient leaves the operating theatre, it can be held in position in the manner which was originally suggested when describing an operation for ruptured urethra. It is the routine employed after the Harris operation. A silkworm-gut ligature is passed through the intravesical

portion of the rubber catheter near the eye, and anchored to the suprapubic wound across a piece of tubing. The penis, including the meatus, should be enveloped in a dressing of iodoform gauze and glycerin or paraffin, and the sterile spigot plugging the catheter should also be covered with sterile gauze. Before the suprapubic tube is placed in the bladder it is ascertained that the end of the catheter lies snugly in a position to ensure proper irrigation and drainage of the prostatic bed.

If the methods outlined above do not result in complete closure of the suprapubic fistula in the third week there is probably some obstruction in the prostatic bed to the passage of urine. Remnants of the prostate may have been left behind during enucleation, or excessive scar tissue may have formed following a severe infection. Post-operative infection is as disheartening to the surgeon as it is to the patient, for it indicates some serious breakdown in the management of the case. Sometimes this infection is difficult to avoid. If a number of infected cases have been admitted to the wards and are undergoing preliminary drainage, unless special precautions are taken the infection may be readily carried from one bed to the next.

In an average case the suprapubic wound should be dry on or about the sixteenth day. Post-operative obstruction may be treated by dilatation, following the methods employed for stricture, but, failing this, either an open operation to remove the scar tissue must be undertaken or a right-of-way for the urine obtained by endoscopic methods. Occasionally after complete removal of the prostate gland there is a regrowth from the periphery. I drew attention to a case of this kind (Wheeler, 1933). The prostate had been removed twelve years previously. The patient was free from symptoms throughout almost this entire period. The old signs and symptoms gradually recurred, residual urine was at a maximum, and by chemical tests renal destruction was almost complete. Gradual decompression and subsequent drainage for six months secured a sufficient return of renal function to permit a second prostatectomy by dissection. The final recovery was complete.

Pulmonary embolism is a catastrophe which follows prostatectomy with some frequency. There were twenty deaths from this cause in a series of 269 cases mentioned by Thomson-Walker. It comes without warning as a rule between the fifth and the twelfth days. The patient calls for the bed-pan, gasps for breath, and usually only survives ten to twenty minutes. Those who have to deal with the post-operative treatment after prostatectomy feel relief when the second week has passed. Pulmonary embolus and delayed haemorrhage are not likely to occur after the twelfth day.

Aperients and Urinary Antiseptics

An aperient may be given on the third day. Enemata should not be employed; they may be followed by haemorrhage. One of the best aperients is one ounce of castor oil given in the early hours of the morning. It is better to avoid purgatives at night time after any major operation; they may be the cause of a disturbed night. In the experience of many, urinary antiseptics are of little value during the days following prostatectomy. I have tried prontosil recently without much obvious result. It must be given with caution to elderly patients. During the early convalescent period infected urine is rendered sterile or improved by the administration of well-known mixtures such as sodium benzoate and hexamine in 10-grain doses. The former is sometimes found to be disagreeable to the patients, and in such cases acid sodium phosphate is substituted. There are many other drugs used as urinary disinfectants; one of the most powerful acidulants is acid. nitro-hydrochlor. fort. Four drachms of this acid are mixed with four ounces of water. The mixture is given in 1-drachm doses four times daily in a tumblerful of water.

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Reports of Societies

PLANT VIRUSES

At a meeting of the Royal Society of Tropical Medicine and Hygiene at Manson House on January 19, with the president, Colonel S. P. JAMES, in the chair, Dr. KENNETH M. SMITH read a paper on plant viruses.

Dr. Smith said that since 1892, when Iwanowsky discovered the first virus, a large number of plant and animal viruses had been described; of the former there were now no fewer than 163 viruses and virus strains on record. The symptoms of virus-affected plants were extremely varied, and almost the only point in common was the uniform distribution of the symptoms over most of the plant, due to the systemic nature of the infection. This was in contrast to the more localized lesions caused by other pathogenic agents. One of the commonest types of symptoms was that shown by the classical tobacco virus disease known as "mosaic": here the leaves were mottled with light and dark green, yellow, or almost white patches, giving a variegated effect. Another and less usual result was a general chlorosis or yellowing of the plant without a mottling effect, associated with various distortions. Distortions, malformations, and outgrowths of various kinds were characteristic of several plant virus diseases. Generally virus-diseased plants did not die.

Two kinds of intracellular inclusions were encountered. The first type, or X body, was a large, rounded, vacuolated mass generally situated near the cell nucleus and originating as a reaction of the cytoplasm to the virus. The second type consisted of crystalline plates such as those observed in tobacco mosaic. As suggested by Beal, these intracellular crystalline deposits might be the source of the virus protein.

Plant virus could be disseminated experimentally by direct inoculation, as by rubbing the virus over the abraded surface of the leaf or by grafting. Viruses were spread naturally by contact of infected and healthy plants through the agency of air, water, soil, or insects. The viruses of tobacco and potato mosaic were examples of spread by direct contact. Almost all insects which transmitted plant virus belonged to the order Hemiptera and sucked the sap by means of a piercing apparatus, which was inserted in the tissue. The mouth parts consisted of a beak in which slid two pairs of fine canalized needles, one of which was the salivary injection canal and the other the suction canal. When the insect fed saliva was injected and a mixture of sap and saliva was sucked up through the other canal. There was a general belief that the virus was swallowed with the sap, went into the gut, passed through the wall of the alimentary canal, entered the blood stream, and subsequently appeared in the salivary glands, whence it was injected into the plant. Though animal viruses multiplied in the insect vector, there was no evidence of such multiplication with plant viruses which might persist indefinitely in the alimentary canal, be injected only at intervals, or be destroyed by digestion

after a short time. Changes in viruses after passage through certain hosts, both plant and animal, were familiar, and possibly multiplication or variation might occur in a virus by association with a particular insect.

Professor S. P. BEDSON stated that animal viruses were transmitted in a variety of ways, and that insects played a less important part than in plant viruses. Rabies, lymphogranuloma inguinale, molluscum contagiosum, and warts were transmitted by direct contact. Many other animal viruses, such as influenza, were transmitted by droplet spray infection, and small-pox and chicken-pox by dried particles. The great difference between the tissues of the plant and the insect would make it improbable that the plant virus would multiply in insects. He disagreed with Dr. Kenneth Smith's exclusion of Rickettsia from the true viruses. The delimitation of the virus group was generally based on (1) small size and filterability, (2) inability to multiply apart from living cells, (3) the production of inclusion bodies. Such criteria would include the agents causing trachoma, inclusion conjunctivitis, lymphogranuloma inguinale, and psittacosis, which bore a close resemblance to Rickettsia, the only difference being that Rickettsia were slightly larger and possessed an arthropod host. He would classify all these in a "right-wing" group. On the other hand, the very small animal viruses appeared homogeneous in composition —nucleoprotein—but it was impossible to say whether they were similar to crystallizable plant viruses. These could be regarded as a "left-wing" group—agents of simple structure reproducing themselves possibly by a process of autocatalysis. The remainder he would classify in a centre group with right and left affinities. The Rickettsia bridged the group between the more complete right-wing viruses and the bacteria.

Dr. G. M. FINDLAY said that animal and plant viruses possessed many similarities. Both were intracellular agents which produced cell necrosis or, more rarely, cellular hyperplasia leading to tumour-like masses in animals, and to outgrowths known as enations in plants. Although cytoplasmic intracellular inclusions were common to both types of virus, intranuclear inclusions were rare in plant viruses. The fact that the majority of viruses carried by insects caused no ill effects in their arthropod hosts suggested that possibly these viruses were primarily insect parasites, their pathogenicity for plants and animals being a later acquirement associated with the insect feeding habits.

SURGERY IN DIABETIC PATIENTS

A joint meeting of the Sections of Medicine, Surgery, and Anaesthetics of the Royal Society of Medicine was held on February 1 for a discussion on surgery in diabetic patients. Mr. C. H. S. FRANKAU, president of the Section of Surgery, was in the chair.

Mr. JOHN B. HUNTER, in opening the discussion, said that the point had not yet been reached at which surgery in the case of the diabetic became a specialist subject; the general surgeon was interested in it. Now that the treatment of diabetes allowed full control of the condition many more cases were suitable for surgery than in the pre-Banting era; moreover, a larger number came for the surgical treatment of conditions incidental to the disease. Cases could be divided into two groups: those in which surgery was considered necessary notwithstanding the diabetes, and those in which surgery had to be undertaken because of some complication of the diabetic state. The second group might be subdivided into cases in which the diabetic condition was aggravated by other metabolic disturbances, and those in which local conditions, such as sepsis, were aggravating the disease. Taking the first group, the risk of operation had to be assessed according to the patient's general condition and his reaction to treatment for the diabetes. The surgeon must be guided by the physician in charge of the case, and close co-operation between the two was most advisable. A properly prepared diabetic ran no greater risk than a non-diabetic patient; indeed, very often the risk was less, because the diabetic had had an adequate period of rest and pre-operative treatment. The same care was essential during the forty-eight hours following the operation. Severe trauma produced in a normal patient a transient rise of blood sugar which was of little importance, but in a diabetic it was significant and might, in a major operation, be the cause of much disturbance.

In the second group, in which the diabetic condition was aggravated by other metabolic upsets, cases involving the pituitary were few, and hardly came within general surgical practice. In thyrotoxicosis the diabetic state might be considerably worsened, with an increase of the metabolic rate and a rapid loss of weight. There remained the large group of cases in which the diabetic condition was aggravated by local sepsis, principally sepsis in the extremities. Diabetics were extremely liable to infected lesions of the feet brought about by conditions, such as cracks and callosities, too close paring of corns, and minor trauma associated with the cutting of nails, which in the normal person would pass unnoticed. Cases often presented a spreading cellulitis of the foot, either locally around an original lesion or with the whole foot involved and an oedema above the ankle. The diabetic patient appeared to experience less pain from lesions than the non-diabetic, which was of importance, as advantage might be taken of it to remove small sequestra, but it should make the surgeon very anxious as regards the application of strong antiseptics and radiant heat.

The treatment of local lesions should be the same as that applied in ordinary cases, but with some modifications. The diabetic state should be ascertained and controlled, though time should not be wasted; if necessary, an incision should be made and the area drained, and the diabetes dealt with afterwards. In the after-care of the wound he recommended packing with sterilized boracic powder. The possibility of gangrene had to be borne in mind. The extent of the gangrene must determine the line of treatment, but, save on rare occasions, the patient should be treated for a period with dry dressings and carefully watched. If improvement took place, as it often did, it was advisable to wait until the maximum improvement appeared to have been obtained, because the surgeon might then find that he had to deal with a lesion of much smaller extent. In amputations other than above the knee the use of a tourniquet was not advised, as the smaller vessels might thrombose during the period of stasis. The indications for amputation must be determined by the general condition, especially the vascular condition, and the degree of gangrene. A septic lesion in the diabetic which called for special mention was the carbuncle, most commonly seen in the neck or back. If it was large when first seen, treatment must be radical; time should not be wasted in treating the diabetes, but steps should be taken to tide the patient over the operation. Diabetic patients were liable to abdominal cramps which might cause some difficulty in diagnosis, simulating the "acute abdomen." It had been said that every other diabetic was a surgical case before death. The surgical mortality in these cases was about 12 per cent.

Preparation of the Patient

Dr. H. P. HIMSWORTH, from the side of medicine, said that he could only subscribe to the principles enunciated by Mr. Hunter. Provided the diabetes was under control, the surgeon could approach the case with the technique he would employ in an ordinary case and have the same confidence in the result. It was very important that the physician should make the decision as to whether the patient had diabetic balance; if such balance were not attained some modification in surgical technique might be necessary. He discussed the clinical signs of lack of balance, the most important of which was ketonuria.

When this was present the diabetes was grossly out of control and the patient in no state for operation. It was quite possible to get rid of the glycosuria and sometimes of the ketonuria by starving the patient, but this was to satisfy the condition of chemical normality at the expense of the patient's condition. Most surgeons would agree that starvation or semi-starvation was a poor preparation for an operation in a non-diabetic, and in the diabetic there was no reason to suppose that it was harmless. When a patient was brought up for an operation for which there was no particular urgency the preparation differed in only one respect from customary routine—namely, to see that the patient received an adequate supply of food from the outset—1,800 calories a day, with 150 to 200 grammes of carbohydrate—and enough insulin to get rid of the ketonuria, say three doses a day instead of two. His own method had been to omit the meal and insulin immediately before operation, but to give 50 grammes of sugar in lemonade two or three hours beforehand and a subcutaneous injection of 25 units of protamine insulin as the patient was put on the trolley to be taken to the theatre. With local and spinal anaesthesia there was no trouble, but with a volatile anaesthetic considerable trouble might arise owing to vomiting.

When the patient came round from the operation there were two principles that governed treatment—to avoid dehydration, to which diabetics were extremely liable, and to guard against the development of diabetic ketosis. The post-operative cases could be divided into two groups—those in which the patients were able to take fluid by the mouth, and those in which they were not—and the speaker discussed in particular the procedure to be followed in the second group and the indications for giving glucose-saline intravenously. He added that as the physician was concerned with the routine care of diabetic patients, it was within his sphere to do all he could to prevent surgical complications. Much could be done to prevent gangrene, which when it occurred was precipitated nearly always by trauma or sepsis, by giving the patients instruction in foot hygiene. Since the employment of a chiropodist in the diabetic department at the hospital the incidence of gangrene had been markedly reduced.

Choice of Anaesthetic

Dr. JOHN T. HUNTER said that most diabetics when coming for operation were under treatment and had been made sugar- and acetone-free. These cases, with certain adjustments, combined with a compensatory increase in insulin, would take their anaesthetic as well as many ordinary individuals. In the case of the untreated diabetic, operation should be delayed if possible, and treatment given in the form of four-hourly doses of glucose and insulin, the urine being examined during treatment. After discussing premedication and the advantages of avertin, he turned to inhalation anaesthesia, saying that chloroform should be avoided because it impaired the function of the liver more than any other agent. The safety of ether was a subject for argument and consideration. In practice ether was of great value in diabetics if used in small doses, especially with adequate pre-operative and post-operative treatment. The best agent for a diabetic patient was nitrous oxide and oxygen. Cyclopropane was the subject of a special clinical examination five years ago, and it was shown that a rise in blood sugar occurred greater than was the case with ether, but there was a rapid return to normal. Sometimes there was an alarming fall in blood pressure after the administration had ceased, and although patients were fairly comfortable during the first twenty-four hours after operation, they suffered a good deal from vomiting during the second twenty-four hours. The fall in blood pressure was due to a too sudden removal of the mask. Divinyl ether was useful as an adjuvant to nitrous oxide and oxygen or in small doses for short operations in children, such as extraction of teeth or tonsillectomy.

General Discussion

In the course of further discussion Dr. W. G. OAKLEY pointed out that very often elderly patients had had diabetes for years but did not come for advice until the arterial condition had produced gangrene. Dr. E. C. B. BUTLER gave some statistics from the London Hospital, illustrating the improvement in mortality rate since the introduction of insulin. Mr. C. E. SHATTOCK spoke of the advantages of periarterial sympathectomy for old people. Mr. C. G. BARNES endorsed what had been said as to the relative freedom from pain in septic complications in diabetes. Dr. W. S. MACLAY said that it was a recognized fact that peripheral nerve degeneration was a common complication of diabetes, probably due to the disturbed metabolism, and he wondered whether this degeneration was a factor in the relative degree of anaesthesia in diabetic patients. Dr. H. LETHEBY TIDY also referred to the elderly patients of whom Dr. Oakley had spoken. The diabetes in such cases was of long duration and often slight. It was the arterial degeneration which advanced rather than the diabetes, and he doubted whether in many cases the results would have been improved had they come up for treatment earlier. Dr. GRANVILLE HEY said that house-surgeons and house-physicians confronted with a case of carbuncle and finding a marked glycosuria were too apt to suppose they had a diabetic patient. In every case of carbuncle in an elderly patient there was a definite glycosuria, and to "plug" insulin into such patients was to hinder rather than help recovery.

NUTRITION DURING PREGNANCY AND LACTATION

At a meeting of the Kensington Medical Society on January 25 a discussion on maternal nutrition and its influence on mother and infant was opened by Professor JAMES YOUNG.

Professor Young said that during recent years a good deal of knowledge of practical value had been obtained with regard to diet and its effect upon maternal morbidity and mortality. For example, the high incidence of anaemia found in pregnant women had been shown to be due to the low intake of iron in the food of large sections of the population; the occasional occurrence of polyneuritis of pregnancy had been recognized as due to lack of vitamin B_1; and osteomalacia had come to be regarded as dependent upon a defective calcium-phosphorus metabolism and as identical in its aetiology and histopathology with rickets.

Professor Young then referred to the large-scale investigation carried out by the Birthday Trust at the suggestion of Lady (Rhys) Williams.

Between July, 1937, and September, 1938, out of a total of 10,123 women attending ante-natal clinics who had received special foods (yeast preparations, milk, etc.) there were two deaths from sepsis and fourteen from other causes, a puerperal mortality rate of 1.57 per 1,000 total births. During the same period the number of deaths among 42,286 women who attended the same ante-natal clinics but did not receive special foods was fifty-five from sepsis and 125 from other causes, giving a puerperal mortality rate of 2.63. In other words, in the cases receiving the special foods the mortality rate was over 40 per cent. lower than in the control series.

During the past year the People's League of Health had begun a somewhat similar experiment on 5,000 women attending the ante-natal clinics of ten London hospitals.

Infant Mortality Rates

In some respects the most important issue in maternal nutrition was its influence upon the morbidity and mortality of the foetus and infant. The decline in infant mortality during the past thirty years had in the main

been due to the saving of older infants. Mortality from stillbirths and from prematurity, malformation, and other factors which had a pre-natal origin had been affected to a much less extent.

Between the period 1906–10 and 1936 infant mortality had declined from 117.1 to 58.7 per 1,000 live births—that is, by 50 per cent. But whereas during the age period 3 to 12 months it had declined from 54.1 to 19.2—that is, by 64.5 per cent.—the decline during the age period up to 1 month had been only from 40.2 to 30.2—that is, by 25 per cent.—and for periods of less than 1 month the decline had been still smaller. Further, the largest mortality occurred during the earliest weeks of life—in 1936 the mortality during the first week of life was 21.9 per 1,000 live births, whilst during the fourth week it was only 2.0. The stillbirth rate had been practically stationary during recent decades.

There was evidence that defective maternal nutrition contributed in a material way to this high foetal and infant mortality. Meanwhile it was suggestive to find that the Birthday Trust experiment showed among the women who had received special food during the ante-natal period a distinct fall in the combined stillbirth and neonatal death rate. Again, in a recent comparison of the infant mortality rates of Queensland and South Australia, A. J. Turner had drawn attention to the effect of maternal nutrition on infant mortality from "ante-natal causes." In Queensland during the six years up to 1936, out of 4,125 infant deaths under 1 year, 2,952 were due to ante-natal causes. The infant mortality rates in Queensland and South Australia were for a number of years similar, until in 1931 the South Australian rate began to decline more steeply, and in 1936 the respective figures for the two States were 36.2 and 31.1. The difference in South Australia was chiefly in the "ante-natal" factors, and according to Dr. Turner the explanation was that during the depression the Government in 1930 began to distribute milk to mothers in areas affected by unemployment.

Pre-natal Deficiencies

As to the specific ways in which maternal nutrition affected the foetus and infant there was growing evidence. Professor Young quoted recent literature to show that in extreme cases of calcium, phosphorus, and vitamin D deficiency severe foetal rickets might occur, and that there was a relation between the density of the foetal bones as tested by *x* rays and the calcium and phosphorus intake and metabolism of the mother. In the Department of Obstetrics and Gynaecology of the British Post-graduate Medical School an experiment carried out over two years indicated a correlation between the density of the foetal bones and the economic position (and therefore the dietary scale) of the mothers. In this connexion it was of special importance to discover whether, as Mellanby found in dogs, deficiency during the ante-natal period predisposed inevitably to rickets in early life regardless of the standard of diet in the post-natal period. Mellanby had given reason for the view that defective dentition and caries in later life arose from those ante-natal and lactational deficiencies which caused imperfect structure of the jaws and imperfect formation of the teeth during the formative pre-natal period.

It was known that in the lower animals vitamin E was specifically required for the growth of the foetus, and there was evidence that abortion, stillbirth, and prematurity might in many cases be the result of a deficiency in this vitamin. Barrie had shown that cretinism developed in the surviving offspring of rats fed on a diet defective in vitamin E. These investigations emphasized the correlation between diet and the endocrine system, which he (Professor Young) had previously pointed out (*British Medical Journal*, 1937, **1**, 953). Among the effects on the offspring of maternal deficiency might be mentioned the anaemia of infants born of anaemic mothers. As the foetus managed to store iron in anticipation of the iron-free period of suckling, this anaemia might not develop until towards the end of the first year of life. During pregnancy and lactation an adequate daily diet would include two pints of milk, one or two substantial servings of green vegetables—cabbage, spinach, or lettuce—one or two eggs or egg yolk, and an apple, orange, or other fresh fruit. Sea fish should be eaten twice a week or more often, and calf's liver once a week. In winter especially one to two dessertspoonfuls of cod-liver oil should be taken if tolerated. Finally, there was undoubted evidence that the diet of large sections of the community was grossly defective in mineral and vitamin elements. Under existing social and economic conditions it was often impossible for mothers to obtain the food recognized as necessary for the security of their own health and for the sound development of their offspring.

MINERAL REQUIREMENTS IN FOOD

A joint meeting of the Society of Public Analysts and Other Analytical Chemists with the Food Group of the Society of Chemical Industry was held on February 1 to discuss the analysis and differentiation of the composition of iron, phosphorus, and calcium compounds in respect of nutritional requirements. Professor J. C. DRUMMOND introduced the subject, iron compounds were dealt with by Dr. R. A. MCCANCE, phosphorus compounds by Professor H. D. KAY, and calcium compounds by Dr. J. D. ROBERTSON.

Professor Drummond referred briefly to the development of methods of assessing nutritional value since the pioneer work of Liebig. To-day the mere determination of the total intake of iron, phosphorus, and calcium was insufficient. For example, the nutritional value of iron in red meat was very different from that of the iron in wheat, and methods of estimating "availability" of the iron had assumed great importance. The problems arising in connexion with phosphorus and calcium were in many respects closely interrelated and had an important bearing on the function of vitamin D. It appeared that at the present time the average intake of calcium and the Ca/P ratios of diets were lower than formerly and much below the optimum values, and this fact might account for the frequent necessity for supplementing the normal intake of vitamin D by the use of certain rich sources of this vitamin which formerly was neither necessary nor available.

Dr. McCance pointed out that iron, in the ionizable form—for example, as mineral salts—was utilizable by the animal body to a much greater extent than the iron in organic combination in haemoglobin or haematin. Since 1930 a means of discriminating between these two forms of combination of iron had come into use. Valuable as this method was, a critical examination of the results obtained with it, compared with the results of biological assays, showed many wide and variable discrepancies, and there was room for great improvement in the methods of biological assay used in this work.

Professor Kay pointed out that in certain respects the nutritive values of phosphorus and calcium were interdependent. In man about 90 per cent. of the total phosphorus present was in the bones, about 8 per cent. in the muscles, and much smaller quantities in the brain and the blood. The different forms of combination in which phosphorus occurs in foodstuffs were classified and their mode and degree of absorption discussed. The presence of precipitants for phosphates in the food ingested might seriously interfere with absorption of phosphorus. This was strikingly shown by recent experiments on the effect of ingestion of beryllium carbonate, which, owing to the practically complete insolubility of beryllium phosphate, was able, when present in certain quantities, to prevent absorption of phosphates present in the food almost completely, and so give rise to rickets even with normal diets rich in vitamin D. A similar precipitating action on phosphates no doubt would account for the known fact that the presence of a large excess of calcium in a diet interferes with phosphorus absorption. A recent promising method of studying phosphorus absorption and metabolism was described, based on ingestion of artificially produced radio-active phosphorus of atomic weight 32. This was indistinguishable chemically from ordinary phosphorus, but it could be determined by means of its radio-active properties.

Dr. Robertson, speaking for Professor E. C. Dodds and himself, described the procedure employed by them in studying the calcium balance in human beings over three-day periods, and gave details of the analytical methods employed. The calcium voided in such studies comprised that part of the calcium ingested which had not been absorbed, and also the calcium from the system which had been excreted. Factors affecting the calcium absorption, such as the composition of the diet, the effect of hydrochloric acidity, and the presence of certain substances, notably lactose, were briefly discussed.

RADIUM THERAPY OF UTERINE HAEMORRHAGE

A meeting of the North of England Obstetrical and Gynaecological Society was held in Manchester on January 13 under the chairmanship of the new president, Professor FARQUHAR MURRAY of Newcastle. Dr. WILLIAM HUNTER (Newcastle) read a paper on the place of radium in the treatment of uterine haemorrhage due to non-malignant states.

Dr. Hunter said that radium was invaluable in such cases in the absence of demonstrable pathology when simple measures, including curettage, had failed to give relief. His observations were based upon a series of 150 cases of benign haemorrhage treated by radium in the Newcastle Infirmary and followed up for a period of two years. Using a 50 mg. pencil applicator with 3 mm. silver filtration, a single dose of 1,200 mg.-hrs. was given as routine. This gave satisfactory results in 94.7 per cent. of cases. Unfavourable sequelae occurred in 34 per cent. of cases, but menopausal symptoms were no more severe than after a natural menopause. The immediate mortality was *nil*, the only fatal case being one of pneumonia occurring seven months after treatment.

A free discussion on Dr. Hunter's paper centred mainly round two points—the dosage to be used and the advisability of using radium to check bleeding in younger women. As regards the question of larger doses, Dr. Hunter considered that the smallest doses which would control the haemorrhage should be given; larger doses might increase the number of complications. Professor Farquhar Murray stressed the value of small doses in occasional cases of menorrhagia in young women, a view which did not gain the support of other speakers. There was a consensus of opinion against the use of radium in cases characterized by much pain.

Unusual Cases

Dr. STANLEY WRIGHT described a case of labour associated with ectopia vesicae and split pelvis. The patient was a primigravida of 25 years, of average height and build, but with the secondary sexual characteristics poorly developed. She had a well-marked degree of ectopia vesicae. The urethral orifice was large, and it was through this that coitus had been taking place. Insemination had occurred as a result of coitus interruptus. The hymen was intact. A skiagram showed about two inches of separation of the pubic bones; the sacrum was thrust forwards by the iliac bones, there being a distance of only about one and a half inches between the posterior superior iliac spines. It was said that in extreme cases these points might become so approximated that it appeared as if the bones enclosed a cavity behind rather than in front—the so-called inverted pelvis. She was admitted at the thirty-second week, unexpectedly went into labour a fortnight later, and was completely delivered in one hour from the onset of labour.

Professor DANIEL DOUGAL (Manchester) described a case of chronic hypertrophic vulvitis following childbirth, for which no cause other than the trauma of labour could be discovered.

Mr. GLYN DAVIES (Sheffield) described a case of regional ileitis complicating dysmenorrhoea in which he successfully resected a segment of the terminal ileum measuring about eight inches in length. The patient complained of abdominal pain but had not experienced any obstructive symptoms. The specimen showed the characteristic diffuse fibrosis of the wall of the gut and the typical giant-cell systems.

NEUROMYELITIS OPTICA

At a meeting of the Devon and Exeter Medico-Chirurgical Society on January 26, with the newly elected president, Dr. R. R. TRAILL, in the chair, Dr. C. J. FULLER and Mr. RANSOM PICKARD jointly described two cases of Devic's disease, one of which was shown to the meeting.

The first case, a girl aged 11, was admitted to hospital on November 19, 1938. She had been perfectly well until three days before, when she complained that she could not see. The deterioration in vision became progressively worse until in the course of twenty-four hours she was completely blind. There was also some slight frontal headache. On admission it was found that both optic fundi were normal. The pupils reacted slightly to light and more particularly to light thrown on the left side of each retina; there was some weakness of the right internal rectus. There was no loss of power in the upper extremities but both biceps jerks were absent. The left triceps jerk was present, the right absent. There was no ataxia, the knee-jerks were present, the ankle-jerks were absent, and the plantar reflexes were flexor. Sensation was normal and the abdominal reflexes were present. There was no Kernig's sign and no head retraction. The cerebrospinal fluid showed 12 lymphocytes per c.mm. and the protein was 60 mg. per 100 c.cm. A week later some muscular weakness was noted on the left side of the face, in the left arm, and in the left leg, and there was an extensor plantar response on the left side. Three weeks later the left hemiparesis had improved and the patient, for the first time since the onset of the illness, was able to recognize the colour of a cup held in the hand. She could also recognize fingers held eighteen inches in front of her eyes. A week later there was again some deterioration in the condition, the hemiparesis had increased, and the patient was once more unable to see a light held in front of her eyes. During the past two weeks there had been steady improvement. The child was now able to recognize faces and the hemiparesis had almost disappeared.

Dr. Fuller contrasted the apparently favourable prognosis in this case with that in another. A woman aged 50 was admitted to hospital on December 24, 1938. Three weeks before this she was unable to see when looking to the right. Two days later she developed acute retention of urine. On examination it was found that she had a paraplegia extending up to the level of the third thoracic segment, with complete sensory loss below that level. There was also a right homonymous hemianopia but the disks were normal. The cerebrospinal fluid showed 32 lymphocytes per c.mm. and a protein content of 95 mg. per 100 c.cm. The Wasserman reaction was negative.

TREATMENT OF PULMONARY TUBERCULOSIS

At a meeting of the Liverpool Medical Institution on January 19, with the president, Dr. E. GILBERT BARK, in the chair, Dr. DENNISON PICKERING read a paper on some unexpected results in the treatment of pulmonary tuberculosis.

Dr. Pickering described how unexpectedly successful results had followed treatment in some acute and in some advanced cases. The patients concerned had all been living normal lives for periods varying from eighteen months to twelve years. Suggestions, based on these cases, were made as to the appropriate use of various ancillary methods in the treatment of the disease. It was argued that the fundamental basis of treatment should be rest in bed, and that no further measures should be applied unless imperative indications should arise, or unless rest alone had proved inadequate. Unexpectedly successful

results from artificial pneumothorax applied at a late stage in exceptional circumstances suggested that this treatment might always be tried before either proceeding to more serious measures or abandoning hope. Figures from authoritative sources showed that the ratio of deaths to reported cases of pulmonary tuberculosis had not fallen appreciably as the result of the introduction of collapse therapy. This did not mean that collapse therapy had failed. It was because the vast majority of cases coming under treatment had already passed the early stages of disease. If cases could be placed under treatment in the very early stage the fall in the death rate from pulmonary tuberculosis would be striking, and more serious surgical measures would probably be rarely necessary. A plea was made for periodical *x*-ray examinations in all cases of persistent cough, recurrent colds or influenza, post-pneumonic conditions, and unexplained debility. The possible antagonism of patients to such measures must be overcome by educating the public to recognize that pulmonary tuberculosis was in its early stages eminently curable.

In the discussion which followed Dr. ROBERT COOPE said that seldom could one hope for restoration of the full capacity of a damaged lung. Healing, with the formation of scar tissue, brought its own peculiar problems, and where there were both fibrosis and active ulceration judgment might become very difficult. Dr. G. S. ERWIN said that in an experience of some two to three hundred cases of pulmonary tuberculosis subjected to phrenic paralysis he had only once seen a cavity close after the procedure. Closure of a cavity after phrenic paralysis should, therefore, be regarded as an unexpected result. Dr. F. GLYN-HUGHES was interested to hear Dr. Pickering's high opinion of the sedimentation rate, and asked which method was used. It had been shown that Westergren's method was inaccurate, and it had practically been displaced by that of Wintrobe. For the last eighteen months Dr. Glyn-Hughes had been studying the changes in the blood picture in cases of cutaneous tuberculosis undergoing treatment by ultra-violet light, and had been impressed by the prognostic aid given by such a study. Perhaps the most important feature was the percentage of lymphocytes.

Local News

INDIA

An Indian Medical Review, 1938

The volume with this title[1] is a work of reference and, as its name shows, is a review of all the medical activities of the Government of India, taking the word "medical" in its widest sense. It contains chapters on hospitals, public health, anti-tuberculosis measures, medical education, nursing, maternity hospitals and work, medical research, drug control, and medical societies and associations. The chapters vary greatly in length; that on medico-legal work fills only three pages, while that on hospitals fills forty-five pages, with an appendix of hospital statistics covering 360 pages—more than half of the whole book. While the book is hardly one to read straight through, there is much of interest in various articles in the different chapters, among which may be mentioned those on the effects of the great earthquakes in Bihar in 1934 and in Baluchistan in 1935; on the Indian (till lately the subordinate) Medical Department, on the Dufferin Fund and the Women's Medical Service for India, on the Minto and Ampthill Nursing Associations; and at the end a report on the medical work of the mission to Lhasa in 1936–7 by the medical officer of the mission, Captain W. S. Morgan. The chapter on medical research sets out the numerous and various subjects, chiefly tropical diseases, on which continuous study is being carried out by the research department, the results being published in the *Indian Journal of Medical Research* and in volumes of separate memoirs. There are seven special research institutes in India: in Calcutta (two), at Kasauli (two), and one each at Bombay, Coonoor, and Shillong. The great amount of work done by mission hospitals is fully recognized, statistics of these hospitals filling nearly fifty pages.

[1] *An Indian Medical Review, 1938.* By Major-General E. W. C. Bradfield, C.I.E., O.B.E., K.H.S., I.M.S. New Delhi: Government of India Press. 4s.

Progress in Public Health

The Public Health Commissioner with the Government of India states in his annual report for 1936 that since 1931, when the last census was taken, that country has remained comparatively free from violent outbreaks of epidemic diseases while the annual balance of births over deaths has consistently favoured increase of the population. The combined mortality from small-pox, plague, and cholera decreased by 62,410, contrasting with the rise in cholera during the three previous years. There has been a downward trend in plague mortality for many years, but in 1936 the death rate from small-pox increased by 16 per cent. over that for the previous year. Malaria and tuberculosis still remain very serious diseases from the point of view of the death rate, but the present machinery for registering vital statistics is inadequate for defining their gravity more exactly. The lack of attention to the welfare of the agricultural population has still to be regretted by the Public Health Commissioner, and it is remarked that no progress will follow the hardest efforts of the public health authorities unless the active co-operation of the villagers is secured. Attempts to win this include the patient presentation of facts bearing on the advantages of personal and environmental hygiene by means of lectures, talks, personal conferences, and house-to-house visits; the most fruitful results follow the teaching of children, but the ideal of service is by no means foreign to the outlook of the adult, and much can be done by stressing this line. Health leagues are commended for individual villages or groups of villages. While financial help may be invited from the more wealthy, the poorer inhabitants may be asked to offer free labour—an ancient custom in many parts of India. Such labour may be devoted to the cleansing of the village tank or the excavation of manure pits. The health officer after a time should be able to prepare a definite programme of work for his staff and for the village health leagues; this programme should be planned to cover a considerable period ahead and include the following items: the improvement of wells, springs, and streams from which water supplies are drawn; the improvement of methods for sewage disposal, including the construction of suitable latrines, cesspools, and drains, and the prevention of nuisances such as the breeding of flies arising from insanitary practices; the planning of suitable methods for the disposal of house refuse and manure away from the vicinity of dwelling-houses; minor repairs to roads and drains, and the filling up of all depressions and pits likely to act as breeding-places for mosquitos; improved lighting and ventilation of houses and the lighting of the village itself; the improvement of markets, cow-houses, and bakeries, and the protection of food exposed for sale; and the improvement of food supplies and nutrition—for example, by encouraging the villagers to grow vegetables and fruit and to increase the production of milk. In all these objectives care has to be taken to use local materials and resources, and not to introduce new ideas with which the villagers are unacquainted. The care of the mothers and children is another sphere of the work of a well-planned health unit scheme, clinics being placed at convenient centres throughout each area. Lieutenant-Colonel Wright, Professor of Ophthalmology in Madras, stated at the Ophthalmological Congress held in Cairo that the main causes of blindness in India were: in children, keratomalacia or xerophthalmia, ophthalmia neonatorum, congenital syphilis, and inherited

blinding diseases; in adults, cataract, various optic nerve diseases (mainly syphilitic), corneal ulcers, glaucoma, and trachoma; in children and adults, irritant remedies and small-pox. He insisted that the prevention of blindness in India was not so much a medical as a social, economic, and financial problem. Keratomalacia, it is pointed out in the report, is essentially a dietetic problem, and has to be approached by instructing the community. Investigations have been conducted by the Nutritional Research Laboratories at Coonoor into the nutrition of the people of the Madras Presidency, and the Director has expressed the opinion that the food available in that Province is only just enough to cover the energy needs of the people provided that it is properly distributed. The average diet, which is mostly cereal, is lacking in animal protein, mineral salts, and vitamins. It follows, therefore, that in Madras as well as elsewhere in India methods of supplying such protective foods as milk, eggs, fish, and meat must be devised, milk being the most valuable one since the majority of the population is vegetarian. In India at present only about 7 to 8 ounces of milk are consumed daily per person, the Punjab being the part where it is most popular, while in the Central Provinces the daily consumption figure is as low as 0.8 ounce. Even in rural areas generally the daily consumption often averages less than half an ounce a head.

SCOTLAND

Advisory Committee on Cancer

The Secretary of State for Scotland has now announced the personnel of the Advisory Committee on Cancer, set up to review the existing facilities in Scotland for the diagnosis and for the treatment of cancer; to recommend what developments are desirable; and to suggest how far, and in what groupings, local authorities in Scotland could with advantage act together in securing that arrangements for the diagnosis and treatment of cancer are adequate for the needs of their areas. Dr. William James Stuart has been appointed chairman of the committee, and the other members are Dr. G. B. Fleming, Mr. H. L. F. Fraser, LL.B., Dr. A. S. M. Macgregor, Mr. David Robertson, LL.B., and Dr. J. J. M. Shaw. The secretary of the committee is Mr. A. J. Purves of the Department of Health for Scotland, 121A, Princes Street, Edinburgh.

Glasgow Royal Maternity Hospital

The twelfth annual medical report of the Glasgow Royal Maternity and Children's Hospital covers the year 1937. The three permanent units of the institution contain a total of 175 beds—seventy-eight being reserved for ante-natal patients, a like number for lying-in patients, and nineteen for suspect cases; the last-named are controlled by an assistant obstetric surgeon and a special house-surgeon in a separate isolation block, no member of the staff of which has any contact with patients in the other parts of the hospital. Septic cases are transferred to the isolation hospitals of the local authority by arrangement with the medical officer of health. During the year under review 4,724 patients were admitted to the hospital and the maternal deaths numbered sixty-two, the death rate being 1.3 per cent. The number of infants born was 3,365. There were 18,101 attendances at the ante-natal dispensary attached to the hospital. The total number of abnormal cases was 3,578 (75.7 per cent. of all admissions). This high figure is attributed to the fact that the hospital serves a large industrial population where the incidence of rickets and malnutrition is high. Since 1935 a blood transfusion service has been maintained by the institution, there being at present 218 donors on the list. Researches are being carried on with reference to the toxaemias of pregnancy, the effects of obstetrical collapse on the anterior lobe of the pituitary gland, heart disease in pregnancy, and the treatment of contracted pelvis. The number of medical students enrolled during 1937 for training in practical midwifery was 263, and 270 nurses were also received for training for the certificate of the Central Midwives Board. Caesarean section was performed in 143 cases of contracted pelvis—the classical operation in ninety-five, and the lower uterine segment operation in forty-eight, with eleven infantile deaths in the first of these, and three in the second. The pyrexia rate for the classical operation was 11.58 per cent., and the combined sepsis and pyrexia rate for the lower uterine segment operation was 8.33 per cent. One patient died under the classical operation from obstetric shock, and one after the lower uterine segment operation from general peritonitis. During the year thirty-one cases were admitted after failure to deliver with forceps, sixteen being primigravidae; there were three maternal deaths.

Aberdeen Infirmary and Paying Patients

At a special meeting of the directors of Aberdeen Royal Infirmary on February 1 it was decided to proceed with the erection of a block to provide accommodation for people of moderate means who are unable to pay full nursing-home charges or a full fee for specialized treatment. It had been realized for some time that people who were not, strictly speaking, proper recipients of the Infirmary's services had to seek admission there because they could not meet the full charges for nursing outside. When the Infirmary's constitution was altered in 1933 the directors obtained power to provide accommodation for paying patients. Funds for this purpose, however, have not previously been available, but a bequest of the late Miss Annie Mary Fraser of Aberdeen has made it possible to proceed with the project. It has been decided to build a separate block attached to the new infirmary at Forresterhill, and trust funds to the amount of £53,400 are available for this purpose. This nursing home will probably be built at the west end of the infirmary buildings, and connected with them by a corridor. There will be accommodation for at least fifty patients, with special kitchen and operating theatre, and the necessary nursing staff will be housed in an extension to the existing nurses' home. Admission will be restricted to persons within a certain income limit not yet defined, and to their dependants.

St. Andrews Institute for Clinical Research

The annual report of the James Mackenzie Institute for Clinical Research deals with its activities for the year 1938. Professor David Waterson, who has been a member of the Institute since its foundation, has been appointed chairman. During the year seventy new cases and 900 additional notes were added to the files of records, and the annual classification showed that 49 per cent. of the records were now complete, 23 per cent. required to be brought up to date, and 28 per cent. were incomplete, chiefly because patients had left the district. In the children's department regular attendances were maintained, and the records were found to be growing yearly more valuable. A statistical survey of these records is nearing completion and the investigations are expected to give a valuable foundation for future work. In the laboratories 651 examinations of pathological specimens of all kinds were made, and there was an extensive bacteriological investigation into an epidemic of Sonne dysentery in January, 1938. A voluntary medical inspection of students at the University of St. Andrews was carried out as in former years. The weekly meetings, which are held on Tuesday afternoons, were well attended, and there were discussions of cases as well as addresses by various lecturers. The balance sheet shows an excess of expenditure over revenue amounting to £560, and although the assets total over £14,310, the council of the Institute makes an earnest appeal for further support.

Correspondence

Fracture of the Olecranon

SIR,—I am much interested in Mr. Naughton Dunn's article on this subject (February 4, p. 214). But I cannot help regretting that he should have advised the removal of the broken fragments with so little reservation because his opinion and authority carry so much weight that they may lead to a general adoption of his advice without due consideration of the drawbacks of his method.

My notice has been recently called to this by the case of a sailor who had an open fracture of the right olecranon which was treated by excision of the detached fragments. It is easy to see the reason for this, under the circumstances, because the surgeon feared to wire the fracture in the presence of likely sepsis. But the sequel was instructive. He got a freely mobile elbow but lost all power of extension. Two attempts were made to reattach the triceps tendon to the shaft of the ulna, but without functional success. Nearly two years after the original accident he came under my care, and expressed himself as most anxious to have something more done, because in his condition he could get no employment. I took a good-sized graft from his tibia, fashioned one end as a peg and left the other as wide as the olecranon. This was driven into the shaft of the ulna, working through a slit in the triceps tendon. Six months later he was able to get a job as a seaman, which he has carried on satisfactorily ever since. It was clear that the triceps was functional but that it could not act efficiently without the leverage of the olecranon attachment.

I have always regarded the open operation and wiring the olecranon as quite satisfactory. There are two essentials of success: the broken fragment must be brought and fixed in close apposition to the shaft, and the arm must be put up and kept up in full flexion for some weeks afterwards. In this way the extensor muscle never gets a chance of contracting or becoming adherent to the back of the joint. When the wound has healed the patient is allowed to drop the arm and then raise it into full flexion several times a day.—I am, etc.,

Clifton, Bristol, Feb 5. ERNEST W. HEY GROVES.

Treatment of "Acute Osteomyelitis"

SIR,—I have followed the recent correspondence on acute osteomyelitis with interest, and think that my experiences of the disease as a rural practitioner may not be entirely valueless. The disease is not common in this area, and in my own practice I have had to deal with only nineteen cases over a period of about twenty-five years. Among these nineteen cases I have had three which I have seen from the onset of the disease. The initial symptoms were the same in all three. The health of the children previously was good. There was a rigor, vomiting, and in a few hours intense headache, the child having a dazed, heavy look and being apparently very ill and taking little notice of anything. The temperatures were 102° to 104° F. In all three cases there was extreme weakness of the legs, with reduced or absent knee-jerks, and in two cases there was definite foot-drop. Pain in a bone was first complained of on the fourth, sixth, and fourth days of the illness respectively, and it was only then that the condition was diagnosed. In two of the cases blood cultures were made and showed *Staphylococcus aureus*, but the laboratory report was only received when the pain had developed and the condition was obvious.

Fortunately these early symptoms are not the precursors of osteomyelitis only. I have noted them in many other ill children, and a large majority have recovered in four or five days without further developments. I have had, however, as patients three other children with these symptoms, of whom two developed empyemata, one with *Staphylococcus albus* in the pus, and one not examined bacteriologically as I thought at the time that I had overlooked a lobar pneumonia, though there never were actual symptoms or signs of this disease. The third patient developed a tender left kidney on the sixth day of the illness, and two days later passed copious pus in the urine giving a pure growth of *Staphylococcus albus* on culture. I feel that it is possible that staphylococcal blood infections in children are not uncommon, that the rarity of osteomyelitis in this particular area is dependent on the general good health of the children and their resistance to the infection, and that possibly an earlier diagnosis could be made before an abscess developed, and be proved or otherwise by a blood culture. Uleron could also be given from the earliest moment; after all, one does not wait for the report on a swab in a case which might be one of diphtheria before giving serum.—I am, etc.,

Wallingford, Berks, Jan. 30. GEORGE MCMULLAN.

Bilateral Rupture of the Quadriceps Tendon

SIR,—When presenting the case record of this rare injury in the *Journal* of December 31, 1938 (p. 1369), Mr. K. L. James stated that there appeared to be no reference in the literature to this accident. In 1929 I described a case which was under the care of Sir Holburt Waring at St. Bartholomew's Hospital (*St. Bart's Hosp. J.*, August, 1929). On consulting the literature I was able to find two other cases of bilateral rupture of this muscle. Sigurd Frey (*Dtsch. Z. Chir.*, 1928, **209**, 284) cites the case of a male aged 60 who jumped from a stage 140 metres high during a dancing festival and ruptured both quadriceps muscles. Albrecht (*Wien. klin. Wschr.*, 1906, No. 22) records the case of a man who was hit on the head and stunned. He fell backwards with the point of maximum flexion of the body at the knee-joints, and ruptured both quadriceps muscles.

These three cases, together with the case described by Mr. Maxwell Landau in your issue of January 28 (p. 190), form a useful addition to the case of Mr. K. L. James.—I am, etc.,

London, W.1, Jan. 30. RONALD W. RAVEN.

SIR,—Mr. K. L. James (December 31, 1938, p. 1369) and Mr. Maxwell Landau (January 28, p. 190) quote cases of bilateral rupture of the quadriceps tendon. I came across a similar case in 1933.

A man of 44 was standing at the top of a flight of steps leading to the entrance of a hotel. The steps were covered with rubber and it was twilight. There was nothing to show the edge of each step. He took a false step and fell, landing at the bottom with both knee-joints acutely flexed. He was carried into the hall and walked a step or two, and then collapsed on the floor. He was then taken up in the lift and placed on his bed. When I saw him he was lying on his back with both legs fully extended. Both patellae were very prominent, and on examination it was found that the flat of the hand could be passed from above

downwards between the patella and the knee-joint in both lower limbs. This led to a diagnosis of bilateral rupture of the quadriceps tendon. Sir Alfred Webb-Johnson kindly saw the case with me. The patient was taken to a nursing home and back-splints were applied for three days to allow the swelling in the joints to subside. An operation was then performed by Sir Alfred. It was found that both quadriceps tendons were completely ruptured. There was sufficient fringe left on each patella to allow suturing of the tendons without drilling the patellae. Back-splints with foot-pieces were applied for two weeks. At the end of that time leather leggings were made for him—extending from ankle to groin. These were fastened along the anterior surface by means of hooks and lace. He then returned to his home, where massage and passive and active movements were begun.

A few months later he wrote to tell me that he had made a complete recovery, saying that he could walk for six miles and jump on or off a bus while in motion.—I am, etc.,

London, W.C.1, Jan. 31. R. F. BOLT.

Copper and Cobalt in Iron-deficiency Anaemias

SIR,—Matters would seem to have been allowed to drift somewhat in regard to the part that copper and cobalt are supposed to play in iron-deficiency anaemia. Too often it would seem to be considered that, because these substances are potent influences in the cure of this anaemia, the anaemia itself must be due to their absence or deficiency in the food and that they must play an essential part in the formation of haemoglobin in normal physiological conditions (see, for example, report of lecture by Dr. W. O. Kermack, *Journal*, January 28, p. 184).

It must be evident, however, that without a sufficiency of iron haemoglobin could not be formed, even if copper or cobalt were supplied in abundance. Further, it would be strange indeed if these two chemical substances, belonging to such different chemical groups, should have been selected by Nature in such a haphazard way and in such redundant fashion to aid in the physiological formation of haemoglobin. Moreover, if the process of reasoning were a correct one, it would be logical to hold the view that because syphilis is cured by salvarsan the disease is due to the lack of this substance, and that, therefore, salvarsan is necessary for the carrying out of the normal physiological processes of the body.

Fortunately for the purpose of deciding the point we have unequivocal experimental evidence. Hart, Elvehjem, and Steenbock, who first drew attention to the beneficial effects of copper in iron-deficiency anaemia, in a subsequent paper (*J. Nutrit.*, 1930, **2**, 277) show that the iron-deficiency anaemia of pigs can be cured by iron salts alone in pure condition and without the addition of copper. A similar demonstration in pigs is afforded by Foot and Thomson (*J. Min. Agric.*, 1938, **45**, 452). *A fortiori*, therefore, copper would not appear to be necessary for the physiological formation of haemoglobin in these animals.

The administration of cobalt has recently been shown to act in a curative fashion in the condition known as "bush sickness" in New Zealand, and in some other allied processes. A disease, designated "pining," occurs in sheep in the border districts of Scotland; and some time ago I showed it to be an anaemia, curable by the administration of iron. Later, I identified it with the previously described "bush sickness," which Aston had similarly and quite independently been curing with iron medication. Subsequently it was shown that the administration of cobalt assisted markedly in its cure, the most recent paper on this subject of which I am aware being that by Corner and Smith (*Biochem. J.*, 1938, **32**, 1800). As relevant to the present argument, it should be noted that, in their Table I (p. 1802), the soils and herbage of some non-pining farms are shown to be very markedly deficient in cobalt; while, on the other hand, on some pining farms these materials are seen to contain it in well above average quantities, both circumstances which go to show that deficiency of cobalt is not the determining factor in the production of the condition.

A similar state of affairs would seem to exist in regard to another animal disease process. There occurs in chickens a condition called "perosis" or "slipped tendon," characterized by an enlargement of the ankle-joint and a slipping to the side of the tendo Achillis. Emslie and myself (*Biochem. J.*, 1934, **28**, 1503) suggested that the feeding of large quantities of $Ca_3(PO_4)_2$, which brings about the condition, produced its effect by "some recondite interference with phosphorus metabolism possibly related to the fact that Ca and P, when joined in chemical union, are relatively unsuited for tissue metabolism." Subsequently it was shown that the administration of manganese cured the condition. The latest paper on the subject (Wiese, Johnson, Elvehjem, and Hart, *Science*, 1938, **88**, 383) leaves no doubt, however, that it is not the absence or deficiency of manganese that produces the condition but that the calcium phosphate excess is directly related to its appearance.

Finally, to refer to a case in the plant world, the onus of proof that deficiency or absence of boron is the cause of the disease "raan" in turnips because the application of boron to the soil prevents it rests with those holding this view.—I am, etc.,

Aberdeen, Jan. 28. J. P. MCGOWAN.

Lead Poisoning

SIR,—In their interesting paper on an unusual case of lead poisoning in the *Journal* of January 28 (p. 150) Drs. G. E. Beaumont and R. Wyburn-Mason, describing a special investigation of the urine, state: "On July 17 lead was found to the extent of 1 part in 10,000,000 parts of urine. This is considered diagnostic of lead poisoning." While the clinical and haematological findings in this case indicate lead poisoning, it seems hardly justifiable to base a chemical diagnosis of plumbism on the finding in one specimen of urine of 1 part of lead in 10,000,000, which is equivalent to 0.1 mg. of lead per litre. Dr. Tompsett and I, in a paper on the lead content of tissues and excreta (*Biochem. J.*, 1935, **29**, 1851), reported daily excretions of 0.16 to 0.03 mg. in the urine of normal people, with a mean of 0.05 mg. for hospital patients. Monier-Williams, in his report on lead in food, which is annotated in the same number of the *Journal* (p. 173), reviews the literature on the normal content of lead in the urine, and to quote from his report: "According to investigations carried out in the Government laboratory in connexion with the inquiry of the Ministry of Health Departmental Committee on Ethyl Petrol in 1930, the average amount of lead in the urine of normal persons is 0.04 mg. per litre, corresponding with an excretion of 0.05 to 0.06 mg. daily, although the individual quantities vary widely."

At the Royal Infirmary, Glasgow, we have had the opportunity of analysing the blood and excreta from a considerable number of cases of suspected or known lead poisoning, and have obtained as much as 0.1 mg. of lead per litre of urine in cases which were not cases of lead poisoning. These results are embodied in a paper by Dr. Tompsett and myself which is at present in the press. In

the case reported by Drs. Beaumont and Wyburn-Mason it is possible that the method of analysis of urine was giving low results because no lead was found in urine collected for two days (August 6 to 8) after treatment with a low calcium diet and parathormone. A completely lead-free urine would be a pathological curiosity. For the chemical diagnosis of lead poisoning I would stress the importance of estimating the lead content of the blood and, in doubtful cases, of the daily excretion in both urine and faeces while the subject is taking a known diet.—I am, etc.,

Biochemical Laboratory, Glasgow Royal Infirmary, Jan. 31. A. B. ANDERSON.

SIR,—The case which was reported by Drs. G. E. Beaumont and R. Wyburn-Mason in the *Journal* of January 28 (p. 150) is of considerable interest, and, while it must be agreed that many of the symptoms reported could be explained by the well-known action of lead on plain muscle, one feels that it is perhaps unwise to draw this conclusion in so atypical a case and in one in which the evidence for the incrimination of lead is so slender. As you point out in your annotation in the same issue (p. 173), the diagnosis of difficult and unsuspected cases of lead poisoning is a matter of some importance, and I feel justified, therefore, in dealing with the evidence as it is presented in this case.

The following conclusion is drawn: "Lead poisoning was present as shown by the stippling of the red cells and the lead in the urine." Now the degree of stippling present at the time of the toxic episode was three stippled cells per 100 leucocytes. This works out at approximately seventy stippled cells per million reds. No mention is made of the method of staining, but even if a double stain were used this degree of stippling is by means abnormal, and certainly is not sufficient evidence on which to base a diagnosis of plumbism. In cases showing clinical symptoms of plumbism one almost invariably finds counts of over 10,000 stippled cells per million reds, and in the rare cases where stippling is absent some degree of anaemia is always found. Moreover, since the jaundice is ascribed to haemolysis one would expect a particularly high punctate count.

The second point on which the diagnosis is said to rest is that the urine at this time contained one part of lead per ten million, and it is stated that this is "considered diagnostic of lead poisoning." This, of course, is not so: 0.1 mg. of lead per litre is regarded as a high normal finding in the unexposed population. It is of interest also to note that during deleading no lead was found in the urine. This is a very unusual finding in cases of plumbism.

The final point is the conclusion as to the source of lead. Here two figures are quoted. One specimen showed the water to be lead-free, while the other, taken after the water had stood for some time in lead pipes, was shown to contain four parts of lead per ten million. Figures regarding the allowable quantity of lead in water are notoriously diverse, but the conclusion of many present-day authorities who employ accurate and extremely sensitive methods of determination is that 0.3 to 0.5 mg. of lead per litre represents the limit of safety.

In other words, I feel that if this is indeed a case of lead poisoning the point to be made is rather that, despite normal blood and urine findings and despite the fact that no source of abnormal lead ingestion could be traced, this boy's susceptibility was such that he presented a clinical picture in keeping with a diagnosis of lead poisoning.—I am, etc.,

Salford, Feb. 1. RONALD E. LANE.

Blood Transfusion in Obstetrics

SIR,—"A plea for the freer use of blood transfusion in obstetrics" should be accompanied by extensive figures showing the efficacy of this treatment. In the paper by Mr. John Stallworthy in the *Journal* of January 28 (p. 153) there is no real proof of the value of transfusion, and no research work is mentioned. The publication of a few cases of haemorrhage which proved fatal without transfusion and an account of one patient who lived after transfusion are no proof of anything. I believe that transfusion has a place in obstetrics, but I object strongly to pandering to the vogue for its use to the exclusion of the various well-known saline mixtures. Nowadays there is too great reliance placed on diet in pregnancy, prontosil, and masks for the reduction of maternal mortality, and not enough on the suggestion that postgraduates and students who wish to save maternal and infant life should sit beside patients in labour watching their progress and really learning the science and art of obstetrics.

In an excellent paper on placenta praevia, read at the Royal Academy of Medicine in Ireland, the Master of the Rotunda Hospital mentioned the figures of placenta praevia during my mastership, when there were 138 cases with two deaths. None of these patients were given blood transfusions, and nearly all had prophylactic saline solution. It seems to me that many fatalities recorded in hospital reports would not occur if the doctor gave saline solution and did not let the patient die because he was waiting for a donor. Although two of the fatal cases recorded by Dr. Stallworthy received saline they might have lived if better obstetrical treatment had been carried out. I must apologize for trespassing on your space, but Mr. Stallworthy's lengthy reference (for which I am obliged) to a paper of mine which appeared in the *Journal of Obstetrics and Gynaecology of the British Empire* impelled this letter.—I am, etc.,

Dublin, Jan. 31. BETHEL SOLOMONS.

SIR,—In common with all those who have to deal with immediate midwifery emergencies, I am grateful to Mr. John Stallworthy for his valuable paper on blood transfusion in obstetrics (*Journal*, January 28, p. 153), but there is one point—namely, the evidence adduced to challenge Professor Solomons's statement—which I do not think conclusive in support of his case. In the first case quoted it should be noted that the patient was lightly anaesthetized and then the placenta removed, and afterwards the transfusion was given. In the second case, after detailed treatment it is stated that the administration was of 100 c.cm. of 50 per cent. glucose solution. In the third case, as in the first, the operation was done of removal of placenta before the introduction of the saline. Now my points of criticism.

The cases are not fair samples of saline transfusion, for I contend that the order of treatment was wrong. No patient exsanguinated should be submitted to operation until after restorative treatment has been carried out, and here I would stress the importance of ¼ grain of morphine intramuscularly, of the injection of gum saline intravenously or of ordinary saline (with or without glucose) subcutaneously. The only qualification for this order of treatment I must mention would be in the case where the patient is still bleeding: the decision then depends largely on the amount the patient has lost or is at the moment losing, and her condition; and I would suggest that light plugging with elevation of pelvis, if the circumstances are favourable for it, while the saline is being administered is a valuable resource.

The late Professor Hillier of Leeds, in a paper before the North of England Obstetric Society, stressed the value of preliminary treatment before evacuation of the uterus, and in October, 1913, the same date as Professor Hillier's paper, I advocated this procedure at a local branch of the B.M.A.

I would point out that in the second case 100 c.cm.—unless a clerical error—is on a generous computation less than a quarter of a pint, and I think it is unlikely to have the least beneficial effect on the bloodless patient.

In conclusion, I believe blood transfusion is a most valuable treatment, but I think Mr. Stallworthy will agree that saline is preferable in that it is always available, can be used quickly, and is the most likely to be employed in these emergencies, in which time is such an important factor.—I am, etc.,

Norwich, Jan. 31. ARTHUR CROOK.

P.S.—Since writing this I have read Mr. Whitworth Taylor's letter. His opinion seems directly contrary to mine—namely, "Following the removal of the placenta, no matter how dire the condition of the patient, she will recover"; and again, "if a woman has a major loss of blood, replacement before removal is a highly dangerous procedure." To the first statement I would maintain that the removal of a placenta, with or without light anaesthesia, is certain to reduce the blood pressure further and so lessen the patient's chances. To the second statement I maintain that the submammary introduction of saline is not accompanied by any added danger and is of great help towards recovery. Whether or not the introduction into a vein of blood is or is not accompanied by risk is not a question I am discussing at the moment.

A. C.

Domiciliary Emergency Treatment of Eclampsia

SIR,—In reply to the letter by Dr. Rufus C. Thomas in the *Journal* of January 28 (p. 188), I take this trouble because I think the approval or otherwise of his procedure at Croydon of inducing labour in the case of a pregnant woman with a diastolic pressure of 90 mm. Hg or over, which after ten days' treatment he has failed to reduce, a question of far-reaching importance. My own views, not being a specialist but only a rural physician living many miles from an obstetrical clinic, would be of no importance were they not based upon many years of practice during which I have kept careful records. Although, according to Dr. Thomas, the two paragraphs of which my letter consisted (January 7, p. 37), apart from a quotation from his own communication, "need no answer," he makes a false assumption, and he asks a long series of questions. I did not make his communication "the basis for a denunciation of all modern clinics," but the basis for a very strong and sincere protest against his methods—methods which I consider morally, and from the point of view of clinical medicine, wrong. To endanger the life of a woman, even under the most modern and most perfect conditions, and to endanger the life of an unborn child because he was unable to reduce a diastolic blood pressure of 90 mm. Hg or over after ten days of treatment is to carry the mechanization of medicine beyond the region of sense.

The objection I have to these modern clinics is the conviction, derived from my visits to them and such letters as those of Dr. Thomas, that in them our women are treated as ciphers. There is no proper review of the whole clinical picture, of the home, and of the psychological effect upon that woman and upon her husband of the loss of a child, borne under stress and anxiety for months, or the birth of a premature, ailing infant taking to the home not the triumph of a successfully terminated pregnancy but the irritations, worries, and sleepless nights which such infants so often carry with them, ending, in many cases, in their death during the first month or, even worse, their death some months later from an intercurrent disease that a full-term child would laugh at. The premature child, premature by even a few days, even if it does ultimately survive, is not the same as a full-term child in the large majority of cases. This I know from bitter experience, and I have seen it carry its effects into manhood and womanhood. Now may I answer Dr. Thomas's questions, always remembering that in a rural practice there is much wandering from area to area of the working population, and that my records are based upon my knowledge of these people only while under my own care.

1. Of twenty-two primiparae with a diastolic pressure of 90 mm. Hg or over and albuminuria, eighteen had a total of twenty-nine subsequent pregnancies, in which three had a diastolic pressure of 90 mm. Hg or over without albuminuria, and seven had a raised blood pressure with albuminuria.

2. Of twenty-five primiparae with a diastolic pressure of 90 mm. Hg or over but with no albuminuria, eight had a total of eleven subsequent pregnancies, in two of which there was a diastolic pressure of 90 mm. Hg or over but no albuminuria.

3. Of twenty-one multiparae with a diastolic pressure of 90 mm. Hg or over and albuminuria, six had a total of ten subsequent pregnancies, in six of which there was a raised blood pressure with albuminuria.

4. Of thirty multiparae with a diastolic pressure of 90 mm. Hg or over but with no albuminuria, three had a total of three pregnancies, in two of which there was a raised blood pressure but no albuminuria.

5. All my cases fully recovered from their abnormal blood pressures, and got rid of their albuminuria following all the pregnancies for which I attended them. One patient, who had a raised blood pressure but no albuminuria, five years after her confinement exhibited a blood pressure of 174/98 mm. Hg with no albuminuria but with the symptoms of hyperpiesis.

6. All these women gave birth to healthy infants.

7. Mrs. M. as a primipara had no abnormal pressure or albuminuria, but she had an adherent placenta which had to be removed manually. I first saw her in her second pregnancy on March 27, 1926, at the age of 35. She had a blood pressure of 210/180 and albuminuria, but she was happy, showed no signs of toxaemia or failing kidneys, and was keen to get a full-time baby. On May 16 her blood pressure was 200/160 mm. Hg. She was confined on May 24, had a very easy confinement, a fine baby, but a rotten, diseased-looking placenta. She soon got rid of her albumin, and her blood pressure fell rapidly. She and her baby are going strong, and I am not going to scare her by appearing at her door with my sphygmomanometer.

8. All my worries seem to begin about five weeks from term, but I have had cases with both raised blood pressure and albuminuria as early as the sixth month.

Is it not extraordinary that I, a rural physician with as my only help my clinical instincts, my sphygmomanometer, my stethoscope, my apparatus for doing a urea concentration test, my common sense, and some knowledge of much-neglected human nature, should have such results, and that Dr. Thomas, with all the advantages of a modern obstetrical clinic, should, out of nineteen cases, have to use means which should cause even two infantile deaths plus the bringing into the world of so many premature infants? Was the craniotomy for the rigid cervix after forty weeks' pregnancy justified? Were there no other means open to the Croydon Obstetrical Clinic of giving that poor elderly primipara the joy of a living child? In conclusion, while I treat a high diastolic pressure as a factor holding me on the alert, my ultimate decision and treatment, no matter what the diastolic pressure may be, is based upon factors obstetrical,

clinical, psychological, economic, and even moral, and upon the advice of my teachers of over thirty-three years ago, long before medicine became mechanized—teachers whose methods and advice never let me or those who trusted me down.—I am, etc.,

Ross-shire, Feb. 1. E. K. MACKENZIE.

Repugnance to Cod-liver Oil

SIR,—I think that the alleged repugnance to cod-liver oil mentioned in the article on vitamin D in diet by Miss Jessie Lindsay and Professor V. H. Mottram (*Journal*, January 7, p. 14) is perhaps exaggerated, at any rate so far as the elementary school child is concerned. My experience, extending over a good many years, was that most children displayed little intolerance to cod-liver oil in the form of cod-liver oil and malt; in fact many used to ask to have it. More children objected to milk than to cod-liver oil and malt. The secret in administration is to begin with a small dose, an eggspoonful or less, and gradually increase the dose to the maximum. I found cod-liver oil and malt very useful as a prophylactic in cases of children susceptible to chilblains, especially in cases suffering from old infantile paralysis.—I am, etc.,

East Grinstead, Jan. 30. EVA MCCALL.

Differential Fertility

SIR,—One of the most vital social problems which has aroused intensive controversy is the extent of the effective influence which contraceptive practices have had in producing differences in fertility between various sections of population. Statesmen, economists, eugenists, doctors, religious teachers—all are profoundly concerned in discovering the facts and the remedy. Professor Raymond Pearl has recently concluded his six years' study of this problem based, he says, "upon the most extensive, accurate, unbiased, and representative material" yet brought together. It includes the reproductive histories of 22,659 women (19,615 whites and 3,044 negroes) from twenty-six large cities in fifteen States east of the Mississippi River. Eleven cities in four States (New York, Illinois, Ohio, and Missouri) furnished 16,900, or 74.6 per cent. of the whole. It is held that this is a fair and representative sample of the general population, and that the results of his elaborate, expert, and most painstaking investigations may be accepted with a considerable degree of confidence.

I have no space to exhibit the magnitude of his computational task, but professors, doctors, and nurses employed in the obstetric service of the large hospital serving these cities where the women attended worked together in discovering every particular—biological, physical, economic, religious, personal—necessary to form a complete estimate of the part played by contraceptive efforts in producing fertility differentials. His conclusions may be summarized as follows:

> First, the more they studied the personal histories the more it became evident that the practice of contraception rests upon an extremely complicated psychological pattern of attitudes and motivations closely interwoven with social situations, and that social, religious, and economic forces, rather than birth-control propaganda as such, played the most effective part. The percentage effectiveness of contraception increased with advancing economic status. The major factors immediately associated statistically with the observed economic class differential fertility were (*a*) increasing age at marriage with advancing economic position; (*b*) increasing prevalence of contraceptive efforts with advancing economic status; and (*c*) increasing effectiveness of the contraceptive efforts actually made with advancing economic status.

But—and this should be particularly noted—the whole of the evidence shows that in the absence of these factors there would be but little, if any, fertility differentials between the several economic classes. Those differences do not rest upon deeply rooted, innate biological differences. Instead, the responsibility for them appears to rest primarily, overwhelmingly, and directly upon the practice of birth control. All the socially differentiated classes would manifest about the same degree of fertility, save perhaps the lowest, in the absence of contraceptive practices.

I have elsewhere contended (and German authority now also agrees) that at bottom we face a spiritual problem—the will to promote national survival. In that religion plays a profound part. In Professor Pearl's investigations the utmost care was taken to discover the influence of religious convictions upon birth control and allied practices. The Jews stand at the top of the list for criminal abortion. Next the "No Religion" group, then Protestants, with Catholics at the bottom, showing that the Sanctions of the Church have demonstrable effect. But he says:

> "The most striking and significant result is the much higher proportion of contraceptive effort among the Jews than among the women of any other religious class . . . the urban American Jews constitute the most ardent birth-controlling group in the population."

The results of Professor Pearl's large-scale scientific investigation, now published under the title *Natural History of Population*, confirm the opinion held by many authorities that the phenomenon of our own falling and ageing population is not due to any loss of innate fecundity in any class but to the operation of practices, conditions, and habits within our own control.—I am, etc.,

Bournemouth, Jan. 23. JAMES MARCHANT.

Thoracolysis

SIR,—I have read with great interest Messrs. L. O'Shaughnessy and G. Mason's article in your issue of January 21 (p. 97) and I wish to stress some points which are not, I think, clear enough. I would consider the thoracolysis more as a local thoracoplasty, or what is better called a "supracavitary thoracoplasty," whose restricted scope and indications are well described by the authors of the article. But as they refer to Monaldi's work it must be clearly pointed out that the antero-lateral elastic thoracoplasty is far from a local one. According to Monaldi the thoraco-pulmonary balance follows four main lines along which the thoracic walls reach their maximum movement, and consequently the underlying lung its widest inspiratory dilatation. Two of these lines are vertical, one inferior and one superior; one is antero-posterior and one oblique antero-lateral. The first two are connected with the movements of the diaphragm; the other two with those of the ribs. These last two follow a line from the second intercostal space near the sternum to the eighth rib near the posterior axillary line. The object of the elastic thoracoplasty is to eliminate these lines of greatest traction.

The operation has a selective effect on the diseased areas, which are freed from the parietal action and can retract, while at the same time the healthy lung tissue can undergo a vicarious dilatation so that healing of the lesions can be obtained with the smallest, if any, collapse, as has been shown by several post-mortem examinations performed and published by Omodei-Zorini. Adopting Monaldi's views I performed the operation as follows:

The first step in the first stage was to bring about temporary or permanent paralysis of the diaphragm. I then resected in the middle axillary line three to four inches of the fourth rib and successively smaller portions of the fifth, sixth, and seventh ribs. The second stage comprised resection of the third rib in the axilla; of the second from the cartilage to the posterior axillary line; and subtotal removal of the first. After both stages a 10 per cent. formol solution was applied to the periosteal bed. I did not try to prevent the localized paradoxical movement which takes place in correspondence to the loss of substance of the thoracic walls, but on the contrary I tried to maintain it as long as possible, because it prevents any inspiratory trauma to the lung just as does a paralysed diaphragm.

As this operation cannot be strictly classified as a method of collapse it cannot be expected to heal big apical cavities with rigid walls. My experience, based on about 800 such operations, is that its main advantages are that it can be successfully used in subacute cases with infiltrations which tend to excavate, and in cases of cavities arising from Assmann's foci or cases of haematogenous tuberculosis when paravertebral thoracoplasties would be too dangerous. This Monaldi-Ascoli's thoracoplasty has also given good results in cases of chronic cavities surrounded by a thick layer of healthy lung tissue and in cases of cirrhotic phthisis with very small cavities.—I am, etc.,

Italian Hospital, W.C.1, Jan. 26. MANFRED ASCOLI.

Circumcision

SIR,—The letter of my colleague Dr. D. W. Winnicott (*Journal*, January 14, p. 86) has attracted little attention except to call forth descriptions of further mutilating procedures. There is much truth in Dr. Winnicott's remarks: the prepuce grows with the child, and becomes free in the majority of boys before puberty. Mutilation of the genitals, both male and female, is a widespread practice among many primitive races all over the world; we are no exception, even though we allow the house officer to perform circumcision with full surgical asepsis. Let us at once explode this superstition. Should Dr. Winnicott allow religion to override the psychologist's objections?—I am, etc.,

London, W.1, Jan. 30. PEARSE WILLIAMS.

SIR,—Why use dressings at all? I gave them up long ago and for all my cases simply pinned a clean napkin round the waist like a kilt. For older boys a smooth towel was fixed in the same way; of course, no trousers. I never had any trouble.

The artery to the fraenum I controlled with a horse-hair suture, which also secured a covering of skin over the raw surface; then, after tying off any other bleeding points with fine gut, two or three horse-hair sutures held the skin in place.—I am, etc.,

Chandlers Ford, Feb. 1. HUBERT H. DU BOULAY.

SIR,—When one thinks of the ideal simplicity of circumcision as practised by the Jewish expert, with his preputial shield, sharp knife, deft fingers and thumbs, and haemostatic dressing, the discussions in your columns leave one amazed. Do we seriously need to fear that an infant who a few days before has come through such a major event as its birth is capable of suffering pain or psychic trauma on account of such a trivial procedure? Do let us be sensible. Surely the right course is that if, after separating the prepuce, it seems probable that permanent difficulty in complete retraction will be experienced, circumcision should be advised. I think too that most people will agree that if there is a doubt it is better to circumcise ten babies unnecessarily than to leave one to be done in later life.

It is surprising that no mention has been made of the mother and the possibility of her psychic trauma. This certainly deserves consideration, as I was taught by my senior partner many years ago. My own practice is to explain to her why her baby will not be conscious of pain, though he may cry just as he does in his bath. Then I try to arrange with the nurse to do it at some time when the mother would be asleep, on a day sooner than she was expecting it, and as far from her room as possible. In case, in spite of my precautions, she has suspected or heard something, I tell her immediately I have secured the dressing, and allow her to have the baby as soon as the nurse has adjusted the napkin. Whatever may be one's views about the feelings of the baby, there can be no question about those of the mother.—I am, etc.,

London, S.E.26, Feb. 5. W. M. PENNY.

*** This correspondence is now closed.—ED., *B.M.J.*

Ulcerative Colitis

SIR,—With reference to Dr. M. Gordon's letter in the *Journal* of January 28 (p. 190), I did not have pyrexia or blood transfusion, but from personal experience of ulcerative colitis I can endorse all the other points he makes. Small doses of opium, together with the astringents which usually accompany it, dieting, and rest had a palliative effect, but desiring to hasten a return to working capacity bowel wash-outs were tried. These caused a marked increase in the diarrhoea. Iron had a similar effect, and an alarming increase in loss of weight followed. Though the haemoglobin content remained good, the obviously great deterioration in the general condition decided one—before it became too low—to accept the drastic remedy of ileostomy. Since then there has been marked general improvement.

One has found throughout that lean meat, in any form, appears to be the most suitable article of diet, and that convalescence was materially assisted by the ingestion of fresh ox blood—made palatable by the addition of raw tomato juice. My experience of the therapeutic value of wash-outs is that both before and after section of the bowel they are of no more significance than the slang interpretation of the word implies, and, moreover, they may cause very distressing tenesmus.—I am, etc.,

St. Leonards-on-Sea, Jan. 30. W. B. MARTIN.

Mechanical Respirators

SIR,—Without the Press and Lord Nuffield it is likely that the suffering public would have had to wait for the widespread benefits of these respirators for the same length of time that it has usually had to wait for the *materialization* of other inventions or modifications. Lord Nuffield should no longer be regarded as a profitable outsider coming late into the medical field—a great proportion of whose scientific and material advancement has been due to lay stimulus—but as an active partner, realizing at long last a cherished ambition to be a doctor. Professional status is denied to him, but surely the hand of companionship and the expression of gratitude will not be withheld in the common fight against disease.

Further, may I inquire, why the tacit sneer about mass production? As a profession we are just waking up to the advantages of large-scale planning, and have

modelled the King Edward's Hospital Fund on bulk buying and uniformity in accountancy and management. Mass production means the *scientific* elimination of waste material and idle stock, waste time and delayed execution, waste man-power and labour costs. By accurately estimating the public's need, and by organizing a complete and accessible analysis of a firm's activities, a sensitive control is kept over its production, maintenance, and delivery work. Far from it being difficult to stop or modify the wheels of mass production once in gear, the opposite is the case. Mass production means uniformity and quantity, and also quality. According to the task expected of the machine, so the wheels of mass production are adjusted before they are set in motion. Wastage is eliminated from the start. Indeed, quantity and quality can be rapidly delivered only by mass planning and mass production. The whole of the rearmament industry is based on this conception.

We have two cockerels in the roost—Business Acumen, represented by Lord Nuffield, and Professional Wisdom, represented by Sir Frederick Menzies and his friends. Rather than goad them into destructive rivalry, pique, and ineffectiveness, let us rather coax them to unite their talents for the good of all, using no word that will debase enterprise into personal strife. The facts are that we need mechanical respirators, and now realize that we have always needed them; and a quick-seeing lay benefactor is already going into action, albeit we are still showing inertia on the plea of expert discussion.—I am, etc.,

Hayes, Middlesex, Jan. 31. H. N. GARRUS.

Tuberculosis: Dogmas and Doubts

SIR,—Though I would wish not to be dogmatic on any point, I would like to state that twelve years' study of the epidemiology of tuberculosis in China, a country in which cow's milk forms no part of the diet, forces me to doubt the general application of Dr. Middleton Martin's conclusion "that the main source of infection in man is milk contaminated with the bovine tubercle bacillus" (*Journal*, February 4, p. 204).—I am, etc.,

Lincoln, Feb. 6. G. A. M. HALL, M.D.

Management of Hypertony

SIR,—The following facts are of such immense importance in connexion with the management of hypertony that I hope you will publish this letter. Excessive protein intake in cases of hypertony overstrains the kidney, which manifests itself in rise of pressure. There is also nitrogen retention under a high protein diet. It is vital in these cases to reduce the load on the kidney to minimum requirements. A method of treatment of these cases has been evolved by us which consists in regulating the protein intake strictly in accordance with the requirements of wear and tear of the tissue—no more and no less.[1] Recent work of Verney and Vogt[2] confirms and supports the conclusions arrived at by us. Since the publication of this volume a considerable number of cases have been under treatment by this method, with striking results. Nocturia has either disappeared entirely or become less frequent and the general condition of the patient improved. It is the only method I know which materially prolongs the lives of the sufferers from this condition. Here are two typical cases:

(E.) Before treatment: systolic pressure 210, diastolic 115 (February 10, 1937). On November 2, 1938: systolic 160, diastolic 100. Patient feels very well.

(Mrs. L.) When I first saw her her systolic pressure was 190, diastolic 120 (May 11, 1937). Under treatment it went down first to 120/110 and kept low for a long time. On September 1, 1938: systolic 170, diastolic 110.

The low protein intake in these cases has been checked by frequent determination of the total nitrogen in the urine and sometimes also in the faeces.

The earlier the patients are put under this treatment the better the result. Apart from high blood pressure cases, excessive protein intake in middle-aged people is not desirable. At present, under the conditions in which middle-class people are living, the kidney has to do about eight to ten times more work than absolutely necessary. I am quite sure this is not a matter of indifference to people who have reached middle age, particularly as, according to the estimation of Professor J. B. Duguid (personal communication), about 40 per cent. of normal late-middle-aged people show some damage to the kidney. I therefore suggested[3] that generally the protein intake should be sufficient to cover the requirements of wear and tear of the tissues only, and that for purposes of energy carbohydrate and fat should be used. The numerous dietary tables contained in the book show that this could easily be done. Possibly family physicians who are interested in the matter would like to co-operate with me in a long-range investigation into this problem.—I am, etc.,

I. HARRIS,
Liverpool, Feb. 2. Honorary Director, Institute of Research for the Prevention of Disease.

Glycerin Medication

SIR,—As long ago as 1902 intratracheal injections of glycerin and izal (or guaiacol) were advocated by Dr. Colin Campbell of Southport, who published his results in the *British Medical Journal* (February 22, June 7, October 4, and October 18, 1902). He stressed the advantage of glycerin over olive oil as a medium for medication—while oil floats on the surface of sputum, glycerin gravitates beneath it and comes in actual contact with the mucous membrane, from which it lifts the sputum, so facilitating its expulsion. In that year I was in charge of the Royal Naval Sick Quarters, Wei-hai-wei, China, and I sent a short account of my experience with this method of treatment, which was published in the *Journal* of March 7, 1903.—I am, etc.,

V. G. THORPE,
London, W.4, Feb. 5. Surgeon Rear-Admiral (ret.).

Hospital Investigations and the Law

SIR,—In the case Cotton *v.* Treissman, reported in the *Times* of January 25 and 26, the plaintiff brought an action for damages on the ground that the defendant, in the course of giving an intravenous injection of uroselectan, allowed some of the fluid to escape into the tissues, thereby causing phlebitis. The learned judge is reported as having given judgment for the defendant on the grounds that there was no evidence that he in fact allowed any escape of the fluid, and that there was no evidence that the thrombosis had resulted therefrom. One is left to infer that had there been proof that some fluid had in fact escaped into the tissues the defendant might have been held to be negligent and liable to pay damages.

It seems to me, Sir, that the issue raised is a most serious one, and merits the earnest attention of the medical profession. I venture to suggest, at the risk of criticism, that few of us who have given any considerable number of intravenous injections could honestly say that never at any time had we had the misfortune to allow

[1] *High Blood Pressure*, Oxford University Press.
[2] *Quart. J. exp. Physiol.*, 1938, **28**, No. 3.
[3] *Diet and High Blood Pressure*, Hogarth Press.

some fluid to escape. For a patient with small veins and a fat arm an intravenous injection requires considerable experience and skill, and I suggest that in such circumstances failure to perform the operation successfully does not constitute negligence.

This and other cases goes to show that with the present wave of enthusiasm for "claiming compensation" on the slightest provocation medical practice is becoming full of pitfalls, and those of us who escape "actions" can thank our luck rather than our judgment. In hospitals these skilled investigations are carried out in order that patients shall have the advantage of the best treatment possible; it seems to me intolerable that young residents in carrying out the preparations for these investigations should be laying themselves open to the risk of litigation that may ruin them at the outset of their career. If the staffs of hospitals are to continue to give patients these advantages it seems desirable that the general public and the legal profession should have it brought to their notice that a different attitude to the question of professional negligence is desirable.—I am, etc.,

London, W.1, Jan. 27. T. W. PRESTON, M.D.

Intravenous Injections

SIR,—Reading the Press report of a recent law case prompts me to emphasize a point which is perhaps insufficiently well recognized. In this case a patient brought an action against a practitioner after an injection of uroselectan into a vein of her leg had caused a thrombosis.

I have had one personal case, and know of one other, in which an injection of uroselectan B was given into a vein at the ankle; in each case a thrombosis of the whole length of the internal saphenous vein ensued, and although there were no further complications such a result was unwelcome both to patient and doctor. The explanation is, I believe, that the circulation in the superficial veins of the lower extremity is often so sluggish that the irritant uroselectan remains in contact with the vein long enough to produce a chemical thrombosis.

In view of the apparent increased liability to thrombosis of the veins of the leg, it seems to me that when it is for some reason impossible to give an intravenous injection in the antebrachial veins other means should be employed in order to obtain a knowledge of renal structure and function. Oral urography is unfortunately much less reliable at the present time than is the intravenous method, but may be employed when an intravenous injection is not possible and when it is particularly desired to avoid the inconveniences of cystoscopy.—I am, etc.,

London, N.6, Jan. 29. B. J. BICKFORD, M.B., B.S.

Foreign Medical Scientists in Distress

SIR,—Ten months ago (*British Medical Journal*, 1938, **1**, 817) you kindly permitted me to appeal to the generosity of my colleagues on behalf of the Society for the Protection of Science and Learning. In the intervening ten months the persecution of foreign scientific men racially or politically obnoxious to their Governments has gone from bad to worse. I seek permission to beg once more. I have none of the psychological skill of a professional appeal secretary, and must be direct and plain-spoken.

First let me say that this society has not assisted, and will not assist, one foreigner to establish himself in competitive medical practice in this country. My father and both my grandfathers were general practitioners in the East of London; I hope medical life may be easier there than it was in 1905 when I wrapped up in white demy paper my last bottle of medicine for a "private" patient and handed my last (unwrapped) bottle of *mist. sal. expect.* to a "club" patient. But it would need a good deal of statistical evidence to convince me that medical life is not still a hard, wearing struggle in East London and that I, at any rate, am justified in helping to make it harder.

Our society is concerned (I speak of course only of activities of medical interest) with biochemists, pathologists, physiologists, bacteriologists, hygienists, and statisticians. It is on their behalf I appeal. But somebody may say, "You are sentimental enough about your clinical memories of a generation back; have you no duty towards the branch of your profession in which your working life has been spent? Is life so easy for your juniors in special fields that you appeal to me to help foreigners?"

Trying first to think of a future unclouded by political uncertainty—a future like that of England for two hundred years after the Huguenot refugees came to us—this is my answer. Those who have read Smiles do not need to be told of the gain to us and the loss to France in industry, politics, and science the revocation of the Edict of Nantes produced. In my own special field of interest I recall the case of Abraham De Moivre. He came to us a penniless exile. There is a tradition that while waiting to present a letter of introduction to a possible patron he found on the table a copy of the newly published *Principia*; he began to read it, and realized with a shock that he knew nothing of the method of fluxions, that he was an ignorant beginner. To earn his bread he did sums for business men who wished to trade in annuities; a grim enough task in days before calculating machines. Well, in the course of that drudgery he invented methods of epoch-making importance in the history of mathematical statistics; while, in pure mathematics, the time was to come when Newton would say to those who asked him questions about fluxions, "Go to Mr. De Moivre; he understands these things better than I do."

I do *not* claim that among the refugees there are many De Moivres; I *do* submit that the story is relevant. We are concerned with scientists trained in different schools, having consequently different points of view. They bring here a new outlook, and the result will be that what is good in their methods will be grafted on our stock and that the range of scientific work, and consequently the possibility of employment for scientific workers, will be increased. If, on the other hand, the clouds thicken and we are to go on living under the menace of a world war, to shelter *trained* medical scientists is to add to our technical resources. In the event of what is euphemistically called an emergency, the supply of technicians will fall greatly short of the demand, and (as I know from a questionnaire we circulated to our guests last September) this source of supply would be valuable. I may say that our society has very precise information, a complete dossier including confidential assessments, respecting every person.

These are the reasons why I plead for the society. I have not said one word on the emotional side of the question—not because I am not passionately anxious to help, but because others can deal with that aspect better than I. At least I have tried to be honest in begging my colleagues to send what they can afford to the Society for the Protection of Science and Learning, 6, Gordon Square, W.C.1.—I am, etc.,

London, W.C., Feb. 4. MAJOR GREENWOOD.

Relief for Spanish Children

SIR,—We are greatly concerned at the serious malnutrition existing among the Spanish civilian population, and especially among the children. Recent reports by experienced investigators make it clear that nutritional diseases such as rickets, hitherto almost unknown in Spain, affect some 60 per cent. of the children of Spain. The effects of malnutrition are everywhere evident, and may have a serious and lasting effect on the population whatever the outcome of the war. Relief efforts must be extended. We commend to the support of London people the children's food ship, which is leaving London shortly for Valencia, and the convoy which is leaving for Catalonia. With the rations they already get it is calculated that 2s. will keep a child in normal health for a month. Londoners are asked to adopt 50,000 children. The offices of the appeal are the All London Aid Spain Council, 4, Great James Street, W.C.1. For those outside London there is usually an appropriate Spanish aid organization, full particulars of which can be obtained from the National Joint Committee for Spanish Relief, 4, Great Smith Street, S.W.1.—We are, etc.,

J. B. S. HALDANE. JOHN RICKMAN.
G. M. VEVERS. ESTHER RICKARDS.
JULIAN S. HUXLEY. J. R. MARRACK.
ALAN MONCRIEFF. A. ST. G. HUGGETT.

London, Jan. 31.

Medico-Legal

AN ACCIDENT WITH UROSELECTAN B

An injured person who seeks to recover damages for negligence must not only prove that he has been injured; he must also prove that his injury was due to the failure of the defendant to exercise due skill and care.

A lady recently[1] sued a house-surgeon for negligence in injecting uroselectan B into her left leg. She said that on the last day of 1934, when he made the intravenous injection in order to prepare her for pyelography, he allowed some of the drug to escape into the surrounding tissues. Phlebitis developed, and as a result the muscles suffered from malnutrition and fibrosis, from which she was not likely to make a complete recovery. The evidence showed that none of the drug had in fact missed the vein, but that the lady had suffered from thrombosis as a result of the intravenous injection. One of the expert witnesses whom she called said that if uroselectan B were injected properly it was practically harmless, and that the thrombosis was evidence that some of the fluid had entered the surrounding tissues. Other experts called for the house-surgeon said, however, that the drug was potentially dangerous even in a vein, and that thrombosis was more likely to be caused by a substance in a vein than by a substance outside it. There had been none of the typical symptoms—for example, inflammation and pain—of an injection into the muscle: the pain had only been felt along the track of the vein. The skiagrams of the kidneys showed excellent contrast, and a large proportion of the uroselectan B must therefore have entered the vein.

Mr. Justice Greaves-Lord commented on the fact that the lady had brought her action so long after the time of the injury, and that she had returned to the same hospital for treatment in the interval without making a complaint. He found no evidence that the house-surgeon had done anything that he ought not to have done or shown any lack of skill, and dismissed the action with costs. The defence was conducted by the Medical Defence Union.

The judgment in this case will reassure those practitioners who may have recently felt qualms about carrying out a valuable—even indispensable—method of investigation, the risks of which are minimal in comparison with its advantages.

[1] Cotton *v.* Treissman. *Times*, January 26, 1939.

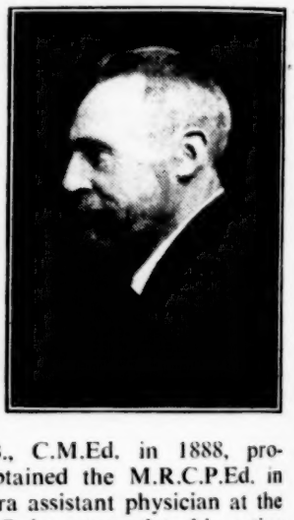
Obituary

R. C. BUIST, M.D., LL.D.

Consulting Gynaecologist, Dundee Royal Infirmary; Past Chairman, Central Midwives Board for Scotland

We much regret to announce the death on February 5 at a nursing home in Dundee of Dr. Robert Cochrane Buist, the well-known Scottish obstetrician and gynaecologist, who was for many years a leading figure in the central and local work of the British Medical Association.

He was born in Dundee in 1860, the son of T. P. Buist, and from Dundee High School went in turn to the Universities of St. Andrews, Cambridge, and Edinburgh, and afterwards studied in Vienna. He had a brilliant academic career. At St. Andrews he won the Lowson, Spence, and Guthrie scholarships, and obtained first-class mathematical honours, graduating M.A. in 1881. At Cambridge he was senior scholar of Corpus Christi College, and was placed fourteenth wrangler in the Mathematical Tripos of 1883. At Edinburgh he became president of the Students' Representative Council, and founded and edited for two years *The Student*. He graduated M.B., C.M.Ed. in 1888, proceeded M.D. in 1894, and obtained the M.R.C.P.Ed. in 1898. After serving as an extra assistant physician at the Royal Edinburgh Asylum Dr. Buist returned to his native city and began to specialize in midwifery and diseases of women. He was appointed lecturer in gynaecology at St. Andrews University, and for many years held the post of honorary obstetrician and gynaecologist to the Dundee Royal Infirmary and consulting gynaecologist to the Eastern Hospital; he was later elected, also, a consultant to the Royal Infirmary, Perth.



Dr. Buist had done valuable work for the organization of hospital services throughout the country, and served on the Royal Commission on Voluntary Hospitals and the Scottish Departmental Committee on Hospital Services; he was also for several years chairman of the Central Midwives Board for Scotland in succession to the late Dr. James Haig Ferguson. He was a man of wide culture, something of a poet, and one of the founders of the Dundee German Circle. For two years he was honorary president of the Dundee centre of the English Association, and his published writings on many diverse subjects revealed his care for the right use of language. In 1932 St. Andrews University conferred on him the honorary degree of LL.D., and two years later Edinburgh paid him the same honour.

It is just on fifty years since Dr. Buist joined the British Medical Association. In 1894 he accepted the post of honorary secretary of the Dundee Branch, and held that office for no less than thirty-five years, becoming president in 1929. He represented the Dundee Division at Annual Representative Meetings on many occasions between 1908 and 1929, and for a year was Deputy Chairman of the Representative Body. At the Annual Meeting at Sheffield in 1908 he was vice-president of the Section of Obstetrics and Gynaecology, and he was vice-president

of the Section of Sociology at the London Meeting of 1910 and the Centenary Meeting in 1932. In the central work of the B.M.A. he was very active and diligent, serving on the Council from 1900 to 1912; and shortly before the war he had been chairman of the Journal Committee. He was also a member of the Constitution Committee in 1901, of the Organization Committee and Insurance Acts Committee 1919–21, and Science Committee 1920–2. Joining the Scottish Committee in 1919, he acted as its honorary secretary from 1922 to 1938. In recognition of his manifold services to the British Medical Association and the profession he was elected a Vice-President of the Association in 1932. He is survived by a son, Major T. P. Buist, R.A.M.C., and two married daughters. His only surviving brother is Mr. W. H. Buist, ex-Lord Provost of Dundee.

Dr. Alfred Cox writes:

The death of my old friend Buist removes yet another of the members of the Constitution Committee of 1900–1 which revolutionized our Association and made it substantially the democratic body it now is. I think Dr. C. H. Milburn of Harrogate and myself are the only two left—a melancholy reflection. Buist, who at the time of the appointment of the committee was a member of Council, was put on the committee as a nominee of the reforming party and took an active part in its work. I well remember that when we were discussing whether there ought to be a referendum from the decisions of the Representative Body, Buist, who acquiesced, prophesied very truly that it wouldn't do any harm, as it would be rarely used.

I suppose that, outside Scotland, there are now not many, even representatives, who knew Buist, but he was for many years a very active man in all the work of the Association. As will be seen from his record he was on the Council and on many committees from 1900 to 1929; on the Scottish Committee he was for many years a tower of strength, and his own Branch, of which he was honorary secretary and then chairman, never called on him in vain. The only position in the Association in which he was not a conspicuous success was that of Deputy Chairman of the Representative Body, a post he held in 1912. He was suddenly put into the chair when the meeting went into committee, and proved to his own satisfaction (well, that is hardly the word, but I cannot find a better) that good as he might be, and was, as a committeeman the guidance of a large and somewhat difficult body in very complicated business was not his *métier*. He took it very philosophically. In the central office Buist was always regarded as a staunch friend, ready not only for any work he might be asked to do but with advice which was always sound. My predecessor, Sir James Smith Whitaker, relied, I think, more on his advice than on that of any other individual. For his logical and analytical mind I always had a great respect, but I disappointed him by exhibiting no great enthusiasm for one of his favourite ideas, which was to get the profession to use the metrical system in prescribing. He tried this on the Representative Body, which, out of respect for him, passed a resolution on the subject, which, however, remained merely a resolution. This was one of Buist's minor disappointments.

It is well that the present generation of the B.M.A. should be reminded from time to time of the debt it owes to men like Buist. He certainly did more than any other single man to convert Scotland to the idea of the new constitution, and he never spared himself in the service of the Association.

[The photograph reproduced is by Elliot and Fry, Ltd.]

J. S. WARRACK, M.D., D.P.H.

Dr. James Stratton Warrack, who died on January 24 at his home in Gravesend after a long illness, had a distinguished academic career. He was a graduate of Aberdeen University: M.A. with honours in Natural Science 1892; M.B., Ch.B. with distinction 1895; M.D. with honours 1898. After appointments as house-physician and house-surgeon at the Royal Infirmary, Aberdeen, and as resident medical officer at the Victoria Hospital, Burnley, and a short period as assistant professor of physiology in his own university, he entered general practice in 1899. The next year, however, he volunteered as a civil surgeon in the South African War, and spent fifteen months on active service. Returning to general practice in Tottenham, Dr. Warrack acted as deputy medical officer of health, and was also honorary anaesthetist to the Tottenham General Hospital. He obtained the diploma in public health in 1902 and the next year was appointed assistant medical officer to the Port of London Sanitary Authority. In 1913 Dr. Warrack was called to the Bar by Gray's Inn, having obtained honours in all his examinations, a prize of £50, and a dispensation of two terms. In 1916 he was appointed deputy medical officer of health to the Port of London Sanitary Authority, and this position he held till his retirement in 1937. Dr. Warrack was a very keen Territorial officer, and as such was mobilized in August, 1914. In 1916 he went to France as Officer Commanding the Home Counties Casualty Clearing Stations, and from 1917 to the end of the war he was Officer in Charge of the Medical Division of No. 14 Stationary Hospital. After the war Dr. Warrack maintained his close interest in the R.A.M.C. (T.F.), attained the rank of colonel, and was appointed A.D.M.S. of the 44th Home Counties Division. He was very proud when his younger son, having qualified in medicine, obtained a commission in the R.A.M.C.

As a civil surgeon in the South African War, as a boarding medical officer in the Port of London, as officer in charge of the Medical Division of No. 14 Stationary Hospital, and as medical officer of the Port Sanitary Isolation Authority's hospital at Gravesend, Dr. Warrack gained a wide experience in the diagnosis and treatment of all the infectious diseases, and there can be few medical officers in this country who have had more cases of enteric fever under their care. Many a soldier and many a seaman have reason to be grateful to him, for he devoted himself unstintingly to his patients, many of whom were desperately ill by the time they arrived in his wards.

W. A. FRASER, *M.C.*, M.B., CH.B., B.SC., D.P.H.

Dr. William Aldridge Fraser was born in Newport, Fife, in 1893. After taking his science degree he decided to study medicine, graduating at St. Andrews in 1918. Fraser was a distinguished student, and obtained medals in a large number of his classes. As the war was then on he was appointed house-surgeon, while still a student, to the late Mr. D. M. Greig at the Dundee Royal Infirmary. Having qualified in January he at once joined the R.A.M.C., and was posted to a battalion as medical officer. He soon distinguished himself again, and received the Military Cross for attending the wounded under heavy shell-fire. Later he also was awarded the French Croix de Guerre. While in the Army of Occupation he got a bad attack of influenza, from which he did not make a complete recovery. This eventually led to his having to give up work in Dundee, where he had returned after

demobilization, and where he was again associated with his good friend Mr. Greig. After an absence from work of about a year he applied for, and got, a post as medical officer at the Ministry of Pensions Hospital at Hi'ghbury, Birmingham, and there he was able to resume the practice of surgery. He also found time to study for the D.P.H. at Birmingham University, and passed the examination in 1923. The same year he decided to become a general practitioner—although he had been warned that it might be advisable to take up a less arduous branch of his profession—and bought a practice at St. Albans, where he remained until his death. A few years ago he was appointed to the surgical staff of the St. Albans Hospital, and was thus able to take up surgery again. He served as honorary secretary of the St. Albans Division from May, 1929, to November, 1935. A chill, caught a fortnight before his death, led to pneumonia, and although he did not expect to recover he displayed great fortitude and made no complaint.

Fraser (writes a colleague) was essentially a modest man, even to the point of self-effacement. His judgment was sound, and he was beloved by his patients, as was shown by the very large number of letters of sympathy received by his family after his death. He had great personal charm and courage. Those of us who knew his history also knew what a continual fight he had to put up against ill-health, but this was not obvious to others. He died on January 23. The funeral was attended by a large number of his colleagues as well as by his patients and friends. After cremation his ashes were scattered on the hills of his native land, of which he was so fond, and where he sometimes hoped to retire. The world is surely the poorer by his passing.

Dr. Harold B. Dykes writes:

I have been honoured by his friendship for over fifteen years, during which William Fraser practised in St. Albans. By his death at the early age of 45 the medical profession has lost a brilliant member, and we in St. Albans a loyal and generous colleague. Of a most shy and retiring disposition, Fraser shunned the limelight. His health was severely undermined by war service, but thanks to his magnificent courage and will-power he overcame his disability and carried on an extensive practice, being loved by his patients, rich and poor alike. He was a well-read man, and never happier than when immersed in a book; he had a great liking for history, his favourite character being Mary Queen of Scots. To those of us who were favoured with his intimate friendship was granted an insight into a humorous side of his sterling character. The hills of Scotland ever called him, and never did he feel fitter than when spending his annual holiday in the Highlands.

Dr. SYDNEY HERBERT LONG, who died at his residence in Norwich on January 15 after a short illness, was a distinguished ornithologist and field naturalist as well as a very popular physician. Born in Norfolk, at Wells, in 1870, the son of Dr. Frederick Long, he received his early education at Epsom College and Caius College, Cambridge, after which he became a medical student at University College Hospital. He qualified L.S.A. in 1894, graduated M.B., B.Ch. in 1897, and proceeded M.D. in 1903. He held house appointments at University College Hospital, and was then appointed house-physician at the Norfolk and Norwich Hospital. He was subsequently elected physician to the latter institution, retaining that appointment for forty years, being also physician to the Jenny Lind Hospital, both of which institutions elected him later on to be chairman. He was also for many years chairman of the Fletcher Convalescent Home at Cromer, displaying a high degree of administrative ability as well as of medical skill, specializing particularly in cardiac diseases and medical biography and writing on both subjects. His chief recreation, ornithology, was pursued with his characteristic energy, and he found time to be a devoted secretary of the Norfolk and Norwich Naturalists Society, retiring in 1936 after twenty-four years of fruitful work, including valuable contributions to ornithological literature, of which one was the annual report of the wild birds' protection committee. He edited the well-known *Transactions* of that society. Dr. Long joined the British Medical Association in 1898, was secretary of the Section of Pathology at the Annual Meeting at Ipswich in 1900, and a representative in the Representative Body at the Annual Meeting in 1912 at Liverpool. In 1926 he founded the Norfolk Naturalists' Trust, and in his own name purchased Cley Marshes. The Trust now owns property of the value of over £14,000, and its great contributions to knowledge of bird life and welfare are well known. Dr. Long supervised all this work, and was mainly instrumental in securing the recognition of Cley and Scolt Head as bird sanctuaries. Since 1901 he had been medical officer of health to St. Faith's Rural District Council; in both medical and ornithological circles in Norfolk he was an outstanding figure, and a most highly esteemed and popular colleague until he became seriously ill at the end of last year.

EDWARD WILLIAM MARTLAND was born at Standish, near Wigan, on October 24, 1854. He was educated at Wigan Grammar School, and Owens College, Manchester, where he gained the Dumville Surgical Prize. He came to Oldham in 1877 as assistant to the late Dr. Platt, and later became his partner, and in 1887 he married Sarah Platt, his partner's daughter. From 1887 to 1909 he was on the staff of the Oldham Royal Infirmary, first as assistant surgeon, and later as acting surgeon; on his retirement from that office he was made honorary consulting surgeon and life governor. He sent his resignation from the active staff before he was due to retire, and he would never tell his friends why he wished to retire at that time, although there is no doubt that his only reason was that he wished his younger colleagues to obtain promotion whilst they could still give their best to the public. This perhaps is the best illustration of his character at all times, and explains why his brothers in the profession in the town and district liked to follow his lead in all professional matters. From the time of the introduction of the Insurance Act, although he was never on the panel, he was a member of the Oldham Local Medical and Panel Committees until 1933, and for many years the chairman. From 1922 to 1932 he represented the Ministry on the Oldham Insurance Committee, and in spite of his wish to retire before that time his colleagues would never agree until his health made it impossible to continue. Dr. Martland was a keen member of the British Medical Association and at one time vice-president of the Lancashire and Cheshire Branch. He had joined the Association in 1877, was on two occasions vice-chairman of the Oldham Division, chairman for three years, and honorary secretary and treasurer in 1916–19. He retired from practice in 1924, and would have done so before that if he had not felt he had a duty to do while the war lasted, and until his partner had returned and had a chance to settle down again. Many doctors in Oldham and the County of Lancashire will always retain very pleasant memories of a great man. He was made a magistrate for the County of Lancashire in 1916, and was placed on the retired list some years ago on account of failing health, which first appeared more than fourteen years ago. During the last six years he has been completely invalided, but to the very last he was always cheerful and keenly interested in medical politics, even though he was unable to discuss them. He leaves a widow and four children, three of whom are members of the medical profession.—F. R.

Dr. M. BIRCHER-BENNER died at the age of 71 at his home in Zürich on January 24. Dr. Cyril V. Pink writes: Thirty-seven years ago he opened his private clinic in Zürich for the prevention and treatment of disease by diet, a subject on which he developed his own theories. He was one of the first in Europe to realize the value of fresh food, and in 1898 he taught that food is degraded by cooking, by too long storing, by factory processes such as fine milling. Even then he held the view that fresh unspoilt food gives high vitality to the body which enables it to keep young and virile, and provides a natural immunity to disease. He held that by wrong habits at the table we are steadily losing our health, our reproductive power and *joie de vivre*. In his practice, therefore, he advised that a high proportion of the daily food should be taken uncooked and in its natural state—50 per cent. for the healthy, 100 per cent. in disease was his general rule. In later life he forbade the use of flesh foods. Though this teaching does not seem strange to us now, forty years ago, before the discovery of the vitamins, it met with fierce opposition, and Dr. Bircher-Benner suffered the usual ridicule and ostracism of the pioneer. However, with the aid of his sister, who possesses unusual capability for preparing uncooked food in an attractive way, he was able to hold his own, and now a busy clinic of sixty-five beds stands as a monument to his genius and industry. In his later years he was considered by some to be the greatest living authority on the practical application of the right diet in health and disease. His cures were remarkable and often dramatic, for he treated causes and not symptoms. He had a wonderful gift for presenting the principles of healthy living to patients of various types in a way that appealed to them. His books have been translated into several languages—the most recent one in English has the title, *The Prevention of Incurable Disease*. He lectured in London in 1933 and 1937.

Medical Notes in Parliament

The House of Lords reassembled on February 7. The Bastardy (Blood Tests) Bill was down for second reading in the House on February 8.

A motion respecting Workmen's Compensation was set down for discussion in the House of Commons on February 8.

The Parliamentary Medical Committee met at the House of Commons on February 6 and conferred about the Cancer Bill with Dr. Hill of the British Medical Association. Next week the Committee will meet to hear experts upon Air Raid Precautions.

Sir Francis Fremantle, having secured the right to move a resolution when the House of Commons goes into committee on the Civil Estimates, will then call attention to the Nursing Services.

General Medical Council

Mr. GALLACHER on February 2 asked Lord Winterton, as representing the Lord President of the Council, to consider legislation for the supersession of the General Medical Council and its replacement by a new body possessing the same powers but containing at least one-half of directly elected medical practitioners and with an age limit for its members of 65 years; and to take the requisite steps to set up a committee representative of all interests to consider and report upon the necessary steps to be taken to this end.

Lord WINTERTON replied that representations with regard to the General Medical Council had recently been made and were at present under consideration, but he was not yet able to make any statement on the subject.

Voluntary Hospitals and Rates

The second reading of the Voluntary Hospitals (Relief from Rating) Bill was moved in the House of Commons on February 3. Mr. WILLIAMS said it was doubtful whether voluntary hospitals could properly be charged with rates. The basis of valuation for rates was the rent which a willing tenant would give a willing landlord. He could not imagine renting a hospital. On the other hand, since 1867, as a result of a judgment in another kind of case, voluntary hospitals had been rated except where two local authorities—one, he thought, being the City of Glasgow and another a Yorkshire borough—had obtained powers not to rate them. The Bill proposed that the example set by those two authorities should be followed. It was unfair to impose on institutions maintained out of charitable contributions the heavy burden of the rates.

The discussion was adjourned.

Law of Libel: Inquiry Promised

Sir STANLEY REED moved on February 3 the second reading of the Law of Libel (Amendment) Bill.

Replying to the debate Sir DONALD SOMERVELL said the law of libel was not in a satisfactory state and required overhauling. The Lord Chancellor, as soon as might be, would set up a committee to consider the matter from a fundamental and general point of view. Sir Donald criticized a clause of the Bill, which proposed to allow an action in slander to be brought without proof of what was called special damage. If this clause ever reached the Statute Book he would be alarmed.

With the leave of the House Sir Stanley Reed then withdrew the Bill.

Charitable Collections Bill

Moving, on February 3, the second reading of the Charitable Collections (Regulation) Bill Mr. CRAVEN-ELLIS said it was based upon the report of a Joint Committee of Lords and Commons. Street collections for charity were already regulated by Act. It was desired that collections from house to house should come under similar control and regulation. In the last few years these had increased four-fold or five-fold. National charities supporting the Bill included the British Empire Cancer Campaign and the British Hospitals Association. The first clause of the Bill provided that the party promoting a house-to-house collection must apply to the police for a licence. By a subsequent clause the Home Secretary could give an exemption in respect of licence to national charities. He would also have power to draft regulations. The Bill further provided that every collector must have a badge and certificate.

Mr. GEOFFREY LLOYD, replying to the debate, said the Charity Organization Society estimated that £40,000,000 was raised annually for charity in this country by voluntary subscriptions and that another £10,000,000 came from investments. No other country had anything to compare with this charitable system. The system did pioneer work which was subsequently taken over by the public authorities, as in the supply of insulin and of radium. There was increasing alarm at the snowball growth of house-to-house collections. The Charity Organization Society had before them that week a case in which two men had formed "The Northern Counties Wireless Association," ostensibly to provide wireless sets for hospitals. Some £250 had been collected, £20 paid out for wireless sets, and £214 swallowed up in expenses. The present Bill had been framed on the instructions of the Home Office. The Home Secretary intended, when the Bill passed into law, to set up an advisory committee to advise him on the exemption of national charities. When that exemption was granted all police authorities would be notified. The national charities would be consulted before regulations were made. He believed that this exemption clause included hospitals. Licences for the major local collections would run for a year, or to an annual renewal date. He ended by insisting that the system of British charity was intimately connected with the health of a free community.

The Bill was read a second time without a division and was sent to a standing committee.

Criminal Justice Bill

A Standing Committee of the House of Commons began consideration of the Criminal Justice Bill on February 7. Clauses 1 and 2, dealing with the constitution and duties of probation committees, case committees, and probation officers, were agreed to; amendments which sought to include in the duties of probation officers the making of "social inquiries" for the courts being withdrawn.

The chief discussion of the day arose on Clause 5, which provides for expenses of mental treatment of probationers among other matters. An amendment was moved by Mr. GODFREY NICHOLSON to include the expenses of medical and surgical, as well as mental, treatment among those which a probation committee is authorized to pay. The ATTORNEY-GENERAL pointed out that the amendment would enlarge the scope of the provision beyond what was intended, but the Government would look into the proposal and see whether, within the limits of mental treatment, they could rearrange the procedure so as to meet the objections raised. On this assurance the amendment was withdrawn.

Mr. NICHOLSON mentioned that the probation officers, through their national association, definitely wanted the provision extended to cover physical defects such as hernia, and asked that this should be included in the Government's reconsideration.

Mr. BENSON moved an amendment to leave out the provision enabling a local authority to recover from a probationer, or those responsible for a probationer's maintenance, an agreed amount in respect of expenses of treatment. He thought that to place a part of the charge on the probationer or the parents of the probationer would induce an atmosphere of hostility and affect the efficacy of the treatment, especially modern psychotherapeutic methods, which so depended on the co-operation of the patient. Discussion was adjourned to the next sitting of the committee on February 9.

Hospital Service in War-time

On February 22 Sir FRANCIS FREMANTLE asked what progress had been made in preparation of the medical and auxiliary services for civil defence.

In a written answer Dr. ELLIOT stated that plans had been made for finding about 200,000 beds in existing hospitals and institutions in the first twenty-four hours of an emergency by sending patients home and transferring them to other accommodation and by putting additional beds and equipment in the wards. Another 100,000 beds could be found later by using ancillary parts of hospitals not at present used as wards. To enable these plans to be put into operation considerable quantities of spare beds and bedding and other equipment had been obtained or were on order. Plans had also been drawn up for grouping the hospitals and for working arrangements, which would operate between the individual hospitals in war-time. These matters were being dealt with in a memorandum on the emergency hospital organization. A draft of this memorandum was under discussion with the Voluntary Hospitals Committee for London and the British Hospitals Association and others directly interested. Progress was being made with the creation of new hospital accommodation. The hospital officers of his Department had noted buildings and land adjoining hospitals in their several regions which were suitable for expansion. Plans for new hospital units were under consideration. A booklet on the structural precautions which might be taken against air raids had been issued to all hospitals and local authorities, and a circular on first-aid posts and ambulance services.

Local authorities were making good progress in securing the transport for ambulance work. In London 1,200 commercial vehicles had already been earmarked by the London County Council in conjunction with the Ministry of Transport. The work of earmarking a further 800 was proceeding rapidly. These figures were additional to the fleet of some 250 peace-time ambulances controlled by the county council and to the 300 Green Line coaches, provision for the immediate conversion of which had already been made.

Dr. Elliot added that on February 15 he would meet a representative gathering of the medical profession to discuss a scheme for allocating doctors so far as possible to the most suitable kinds of work in the event of war, full use being made of the register compiled on behalf of the Government by the British Medical Association, which covered 95 per cent. of the profession. The Central Emergency Committee for Nursing recently appointed by him had begun its work of registering and organizing reserves of nurses.

EPIDEMIOLOGICAL NOTES

Scarlet Fever and Diphtheria

Of the principal epidemic diseases diphtheria is the only one which has risen progressively since the beginning of the year, but the weekly increases have not been uniform. The figure last week—1,364—is only slightly below (97 per cent.) the median value for the corresponding weeks of the last nine years and is very considerably less than that recorded last year. In London diphtheria has been much less prevalent, notifications at 124 last week being only 62 per cent. of the expected value. An even greater increase in the notifications of scarlet fever was recorded in the first three weeks of the year, but in the week ended January 28 notifications fell from 1,821 to 1,742 and are 71 per cent. of the expected value. In London, on the other hand, notifications continued to increase, but so far have not amounted to more than 68 per cent. of the expected value.

Influenza

Although acute pneumonia (primary and influenzal) is still more prevalent in England and Wales than in the corresponding weeks for the last nine years—being 9 per cent. in excess of the expected value—the seasonal increase of the disease noted in these columns in recent weeks has failed to attain epidemic proportions, and for the last two weeks the numbers notified have fallen from 1,793 to 1,638 and 1,507. Decreases have also been reported in Scotland, Eire, and Northern Ireland. At the same time deaths ascribed to influenza have fallen by nearly 50 per cent. in all four countries. Concurrently with the decline in the number of deaths from influenza the general mortality rate for the principal towns in each country shows a small reduction, but considerable fluctuations were observed. Against the rate of 14 per thousand population for the principal towns of England and Wales rates of 16.5 and 15.2 were reported in Manchester (8 deaths from influenza) and Bristol (5 deaths from influenza) respectively, while in Liverpool, in which there were 14 deaths from influenza, the rate was as low as 12.2 per thousand. Thus although influenza during January has been responsible for an increase in the general mortality rate its influence has been only slight and in some areas negligible.

The latest reports from centres in Europe indicate an increased prevalence of influenza, which took place about the same time as in this country; in Europe the disease continues to spread, but remains, as in this country, mild in character. In Germany the number of deaths from influenza in the great towns rose in the week ended January 14 from 95 to 116 and the number of deaths from pneumonia from 640 to 653; despite these increases the general death rate in these towns fell during the week from 15.1 to 14.5 per thousand population.

In Denmark during the first three weeks of the year 607, 740, and 1,525 cases of influenza were reported in Copenhagen, among which there were 3 deaths. In Switzerland during the week ended January 21, 4,758 cases of influenza were reported at Basle, compared with 1,723 in the previous week, while outbreaks were notified in the cantons of Basle-Landschaft and Aargau. In Hungary in the week ended January 23 the number of complicated cases of influenza rose from 279 to 424 (62 in Budapest and 101 in the department of Pest-Pilis).

No. 4.

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended January 28, 1939.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for : (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland. Median values for the last 9 years for (a) and (b).

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for : (a) The 126 great towns (125 in 1938) in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1939					1938 (Corresponding Week)					1930-38 (Median Value Corresponding Weeks)	
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)	(a)	(b)
Cerebrospinal fever	34	3	11	1	—	28	5	16	7	—		
Deaths		1	2				3	4				
Diphtheria	1,364	124	211	46	36	1,892	200	245	64	61	1,400	200
Deaths	26	1	5	2	—	40	7	8	5	3		
Dysentery	29	2	15		—	273	65	97		—		
Deaths				—	—				—	—		
Encephalitis lethargica, acute	3	—	—		—	3	1	—		—		
Deaths		2					3					
Enteric (typhoid and paratyphoid) fever	17	2	3	3	2	61	8	3	—	—	28	
Deaths	—	—	—	—	—	2	—	2	—	—		
Erysipelas			104	5	7			95	9	6		
Deaths		1					1					
Infective enteritis or diarrhoea under 2 years												
Deaths	38	12	6	6	3	60	25	7	9	2		
Measles		31	32		1			1,661		751		
Deaths	3	—	—	—	—	37	2	17	3	22		
Ophthalmia neonatorum	91	14	28		—	103	12	47		—		
Deaths												
Pneumonia, influenzal*	1,507	151	68	8	37	1,302	110	11	8	26	1,380	176
Deaths (from influenza)	173	28	41	3	9	60	9	8	2	—		
Pneumonia, primary			373	9				323	13			
Deaths		20		24	22		20		21	23		
Polio-encephalitis, acute	2	—				1	—					
Deaths		—					—					
Poliomyelitis, acute	15	1	3		—	6	—	1		—		
Deaths		1					—					
Puerperal fever	.8†	8	10	2	2	—	—	16	—	1		
Deaths		1‡					1‡					
Puerperal pyrexia	158	16	29		1	191	31	19		—		
Deaths												
Relapsing fever	1	—			—	—	—	—		—		
Deaths												
Scarlet fever	1,742	166	477	38	79	2,431	167	556	93	84	2,439	243
Deaths	2	1	1	—	—	10	—	1	2	—		
Small-pox	—	—	—		—	—	—	—		—		
Deaths	—	—		—	—	—	—		—	—		
Typhus fever	—	—	—	—	—	—	—	—	—	—		
Deaths				—	—	—	—		—	—		
Whooping-cough		250	468		30			46		9		
Deaths	14	4	10	1	2	16	2	1	1	—		
Deaths (0-1 year)	377	70	72	38	34	408	82	91	41	41		
Infant mortality rate (per 1,000 live births)	57	58				69	67					
Deaths (excluding stillbirths)	5,697	1,111	820	256	193	5,263	1,074	799	228	197		
Annual death rate (per 1,000 persons living)	14.0	14.1	16.6	17.2	17.1	13.0	13.5	14.8	15.4	17.5		
Live births	5,794	969	882	315	226	6,365	1,246	884	335	232		
Annual rate per 1,000 persons living	14.2	12.3	17.9	21.2	20.0	15.7	15.7	18.0	22.6	20.6		
Stillbirths	241	35	42			286	49					
Rate per 1,000 total births (including stillborn)	40	35	44			43	38					

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

† After October 1, 1937, puerperal fever was made notifiable only in the administrative county of London.

‡ Death from puerperal sepsis.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

The Faculty Board of Medicine has appointed Dr. G. S. Graham-Smith, Dr. C. H. Whittle, Dr. Mann, Professor Keilin, and Mr. R. Williamson to be members of its Degree Committee from February 1, 1939, to January 31, 1941; and Dr. R. A. McCance and Mr. H. E. Tunnicliffe to be members for the same period in the room of Dr. T. S. Hele and Dr. Eric Holmes. Sir Walter Langdon-Brown and Dr. Arnold W. Stott have been co-opted as members of the Faculty Board of Medicine until December 31, 1939.

UNIVERSITY OF LONDON

UNIVERSITY COLLEGE

A course of three lectures on "Recent Advances in Normal and Malignant Cellular Growth" will be given by Dr. R. J. Ludford at the College, Gower Street, W.C., on Tuesdays, February 14, 21, and 28, at 5 p.m. The lectures are open without fee or ticket to students of the University and others interested in the subject.

UNIVERSITY OF LIVERPOOL

Dr L. Cunningham, demonstrator in medicine, has been appointed to a lectureship in clinical medicine.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

Lectures

The following lectures will be delivered at the College, Pall Mall East, S.W., all at 5 p.m.

The Milroy Lectures on "Industrial Capacity and Modern Medicine" by Dr. Donald Stewart on February 23 and 28; the Goulstonian Lectures on "Diabetes Mellitus" by Dr. H. P. Himsworth on March 2, 7, and 9; the Lumleian Lectures on "Primary Carcinoma of the Lung" by Professor W. W. D. Thomson on March 14 and 16; the Oliver-Sharpey Lectures on "The Pharmacological Actions and Therapeutic Uses of Some Compounds Related to Adrenaline" by Professor J. A. Gunn on March 21 and 23; and the Croonian Lectures on "Visceral Neuroses" by Professor J. A. Ryle on May 18, 23, and 25. Any member of the medical profession will be admitted to the lectures on presentation of card.

SOCIETY OF APOTHECARIES OF LONDON

The following candidates have passed in the subjects indicated:

SURGERY.—N. P. Eastwood, J. B. Headley-Blythe, R. Rowlandson.

MEDICINE.—H. B. O. Cardew, E. M. E. Decottignies, N. B. Eastwood, V. W. J. Hetreed, E. S. Nicholson.

FORENSIC MEDICINE.—H. B. O. Cardew, E. M. E. Decottignies, N. B. Eastwood, V. W. J. Hetreed, E. S. Nicholson.

MIDWIFERY.—N. P. Desai, M. C. Mair, J. C. Scott, E. A. Spouse, P. P. Vaidya.

The diploma of the Society has been granted to H. B. O. Cardew, V. W. J. Hetreed, E. M. E. Decottignies, E. S. Nicholson, J. B. Headley-Blythe, and R. Rowlandson.

The second triennial Joseph Strickland Goodall Memorial Lecture on Cardiology will be delivered by Dr. D. Evan Bedford at Apothecaries' Hall, Water Lane, Queen Victoria Street, E.C., on Wednesday, March 29, at 9 p.m. His subject is "Left Ventricular Failure." Members of the medical profession are invited to attend.

CONJOINT BOARD IN SCOTLAND

The following candidates, having passed the requisite examinations, have been admitted L.R.C.P.Ed., L.R.C.S.Ed., L.R.F.P. and S.Glas.:

Frances A. M. Aldridge, M. H. Awwad, J. M. Bailey, H. J. Berger, A. Binnie, C. F. Campbell, F. J. Carter, S. Citron, J. C. Dick, P. Dinner, M. Farid, W. M. Fernando, G. Fleming, W. Forsyth, W. E. Foy, B. Geneen, A. H. Germaine, I. Gottlieb, M. Kolta, R. E. Lindsay, I. F. Logan, Chong-Leng Lo, C. E. Meade, N. Abd-el Messih, C. E. Miller, R. D. Mishkin, D. C. Moir, C. S. P. Peiris, A. Robertson, A. Rubin, D. Salamon, C. A. Samuels, R. S. Sanderson, B. C. Sen, E. Snell, L. J. Spitz, L. G. Starr, W. Tannock, D. Valerio, J. A. Watson-Joe.

The following graduates of recognized foreign universities were also admitted licentiates:

L. Appel, J. Brody, J. C. Hayward, M. Herzberg, H. Kaufmann, F. Lachs, G. Szanto.

The Services

DEATHS IN THE SERVICES

Inspector-General CHARLES CANE GODDING, C.B., R.N. (ret.), died on February 1, aged 87. He took the M.R.C.S. and L.S.A. in 1872, after which he entered the Royal Navy, and attained the rank of inspector-general on December 3, 1903. As surgeon of H.M.S. *Modeste* he served in the Perak war of 1875–6, receiving the medal and clasp. He next served in the Egyptian war of 1882, when he was attached to a battalion of the Royal Marines and was present at the actions of Kassassin and Tel-el-Kebir, receiving the Egyptian medal with clasp, the Khedive's bronze star, and the Fourth Class of the Medjidie, and was specially promoted to staff surgeon. He gained the Sir Gilbert Blane gold medal for the years 1889 and 1890. He received the C.B. on June 19, 1912, on King George V's coronation.

Medical News

A meeting of the Marylebone Division of the British Medical Association will be held at the Medical Society of London, 11, Chandos Street, W., on Tuesday, March 7, at 8.30 p.m., when there will be a discussion on "Workmen's Compensation."

The third Skinner Lecture will be given on Friday, February 17, at 3.30 p.m., before the British Association of Radiologists at 32, Welbeck Street, W., by Professor P. Lamarque of Montpellier University, on "Diffuse Skeletal Metastasis in Cancer of the Breast" and "Some Results of Historadiography." All members of the medical profession are invited to attend.

Discussions on "The Evils of Cesspool Drainage," to be opened by Mr. J. R. Barron, and on "The Application of Bioclimatology," to be opened by Dr. R. J. Maule Horne, will take place at a sessional meeting of the Royal Sanitary Institute at Poole Municipal Buildings on Friday, February 24, at 5 p.m.

In our advertisement columns this week the University of London invites applications for (*a*) the University Chair of Medicine tenable at St. Mary's Hospital Medical School, and (*b*) the University Chair of Dental Surgery and Pathology tenable at the Royal Dental Hospital of London School of Dental Surgery. The salaries attached to the posts are £2,000 per annum, and £1,500 per annum rising to £1,600 respectively.

The Economic Reform Club and Institute (26, Grosvenor Place, S.W.1) has arranged a dinner to be held at the Savoy Hotel on Friday, February 24, at 8 p.m., when the guest of honour, Sir John Boyd Orr, F.R.S., will speak on "Health and Agriculture."

At the twelfth session of the German Association for Study of the Circulation, on March 25 and 26 at Bad Nauheim under the presidency of Professor Edens, the special topics will be the electrocardiogram and the treatment of cardiac failure. Inquiries should be addressed to the headquarters of the German Association, Residenzstrasse 32, Dresden-Blasewitz.

On the evening of Tuesday, February 7, the Royal Society combined with the British Academy to give a reception to the exiled scholars and scientists now under the care of the Society for the Protection of Science and Learning (late Academic Assistance Council). The guests were received at Burlington House by Sir William Bragg, P.R.S., and Sir Frederic Kenyon, and the Archbishop of York replied to the welcome on their behalf. The campaign to make known throughout the country the work which is being done on behalf of academic refugees opened on the previous day with a meeting in the Great Hall of University College, London. A number of other meetings, in London and elsewhere, have been arranged for this and next week under distinguished patronage: on February 8, at Cambridge, the Vice-Chancellor presided at a meeting addressed by Earl Winterton and Pro-

fessor A. V. Hill, and to-day (Friday, February 10), at Oxford, the Vice-Chancellor presides at a meeting in the Sheldonian, to be addressed by Viscount Samuel and Sir John Hope Simpson. Sir William Bragg is speaking at Liverpool and Sir Henry Dale at Glasgow.

On January 26, in the amphitheatre of the Paris Faculty of Medicine, the first occupant of the chair of neurosurgery, Professor Clovis Vincent, delivered his inaugural address.

In the January issue of *Occupational Psychology*, published by the National Institute of Industrial Psychology, there is an interesting account of the development of industrial psychology in Spain from 1915 until its interruption by the present civil war. In the same issue Mr. Alec Rodger, head of the vocational guidance department of the institute, outlines a new scheme for the formation of a vocational guidance centre on the lines of a teaching hospital, where free advice can be obtained, research carried out, and teachers and others given a thorough grounding in psychological methods of vocational guidance.

The issue of *La Riforma Medica* for December 3, 1938, contains the proceedings of the twenty-ninth congress of the Italian Society of Orthopaedics and Traumatology held in Rome on October 17–18, when the subjects for discussion were orthopaedic assistance to poliomyelitis cases in Italy and surgical treatment of osteo-arthritis deformans of the hip.

La Presse Médicale for February 1 draws the attention of its readers to an international body which, under the patronage of the Grand-Duchess of Luxembourg, publishes a quarterly review, *La Protection de la Population Civile en Temps de Guerre*. It deals with the various aspects of A.R.P., and is published in Luxembourg.

We have received the first issue of a new journal published by Georg Thieme of Leipzig entitled *Geburtshilfe und Frauenheilkunde*, and edited by H. Albrecht, I. Amreich, H. Eufinger, H. Guggisberg, C. Kaufmann, H. Martius, H. Naujoks, R. Schröder, and L. Seitz. The policy of this journal is to bring before the practising gynaecologist and obstetrician the results of modern research.

We have received the first issue of the *Caribbean Medical Journal*, the publication of which is the outcome of a resolution passed in 1937 at the annual meeting of the Trinidad and Tobago Branch of the British Medical Association. The object of the new journal is, among other things, to provide an opportunity for recording the clinical features and treatment of diseases common to the West Indies and British Guiana. This first issue contains 125 pages, which are devoted to all aspects of medicine, surgery, and obstetrics.

The Central Emergency Committee for the Nursing Profession, recently appointed by the Minister of Health, is now established in an office at Romney House, Marsham Street, London, S.W.1.

With the assistance of Dr. W. S. C. Copeman of the British Red Cross Clinic and Dr. S. H. Daukes of the Wellcome Museum, Colonel R. J. Blackham has arranged a rheumatism exhibit in connexion with the Hospital and Nursing Conference and Exhibition, to be held at the New Horticultural Hall, Westminster, from February 13 to 17. He would be glad to meet any medical men interested in the subject on the day the exhibit opens.

BELFAST TUBERCULOSIS SCHEME

In the paragraph with this heading, published in the last issue of the *British Medical Journal* (February 4, pp. 241–2), there appeared the following sentence: "The series of articles which appeared in the *Belfast Telegraph* recently on medical subjects (which were sponsored by the Northern Ireland Branch of the Association) indicated to the public the many unsatisfactory features of local health services." We wish to add, though it should be unnecessary, that this sentence was not intended to convey any unfavourable reflection whatever upon the capacity of Dr. Charles S. Thomson as Medical Superintendent Officer of Health for the City of Belfast.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Secretary, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

ADVERTISEMENTS.—All communications should be addressed to the Advertisement Manager (office hours 9 a.m. to 5 p.m.). Orders for copies of the *Journal* and communications with reference to subscriptions should be addressed to the Secretary, B.M.A. House.

The TELEPHONE NUMBER of the British Medical Association and the *British Medical Journal* is EUSTON 2111.

The TELEGRAPHIC ADDRESSES are
EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aitiology Westcent, London.*
SECRETARY, *Medisecra Westcent, London.*

The address of the B.M.A. Scottish Office is 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh;* telephone 24361 Edinburgh), and of the Office of the Cumann Doctúirí na h-Éireann (I.M.A. and B.M.A.), 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin;* telephone 62550 Dublin.)

QUERIES AND ANSWERS

Case for Diagnosis

Dr. KWAO SAGOE (Mamfe, Cameroons) writes: The following points may assist Dr. E. S. Hawkes (November 19, 1938, p. 1070) in arriving at a diagnosis: (*a*) If the schoolgirl patient has been in the Tropics or has lived with any relative or friend connected directly or indirectly with the Tropics, examine the blood, taking an ordinary blood film and a thick blood film. (*b*) Examine her pelvic organs or call in a gynaecologist. (*c*) Count her blood cells, paying special attention to the white cells and eosinophils.

Infra-red Rays

Dr. L. ELWELL-JOHNSTON (London, S.W.19) writes: "G.P." suggests in the *Journal* of December 17, 1938 (p. 1296), that infra-red-ray treatments might be given through thin clothing. The effect of the treatment is more profound and more lasting if given on the bare skin, finishing with a cool sponge. The infra-red ray dilates the vessels supplying the area, bringing more blood there; infiltrates are dissolved and carried away, and pain is relieved. The application of cold fixes the vessels for a time in this dilated condition, which accommodates the increased blood supply, and thus continues the effect of the treatment.

Income Tax

Interest on Bank Overdraft

"F. L." asks whether he is entitled to any relief in respect of interest paid on bank overdraft.

*** Yes; he should obtain from his bank manager a certificate of the amount of interest paid by him for the year to April 5, 1939, and forward it to his inspector of taxes asking for an allowance. The amount due will either be refunded to him or deducted from the July instalment of tax on his salary, etc. Claims can be made for past years—the year 1932–3 will become out of date on April 6 next.

Treatment of Trust Income

"M. B. J." is a trustee and beneficiary of a trust fund. Until recently the trust paid tax on the whole of its income, and "M. B. J.," whose income is below the taxable limit, was repaid accordingly. A change has now been made as a result of which the trust gets relief in respect of some losses and pays less tax, with the result that "M. B. J." is repaid less.

*** It is presumably the duty of the trustees to take advantage of any income tax provisions which will reduce the amount of tax payable on the trust income. If as a result some particular beneficiary cannot claim to have paid as much tax on his share of the income as he otherwise would, he appears to have no remedy. One would, however, have expected "M. B. J." to have been consulted by his co-trustees before the change was made.

LETTERS, NOTES, ETC.

Immigration and Social Reorganization

Dr. DUNCAN LEYS (Inverness) writes: In the interests of truth, and to contradict a very pernicious belief (which incidentally leads its victims to adopt very unchristian doctrines), I ask for space to reply to Dr. Tamplin's letter (*Journal*, February 4, p. 247). If *Punch* were now, as it once was, a vehicle for savage satire on social injustice, I agree that the state of Scotland would be a fit subject for its pages. The Scottish Highlands had a population of 360,000 at the beginning of the century, and of 290,000 in 1936: births per thousand women of child-bearing age have fallen from 100 to 70 during the same period, and for the whole of Scotland from 111 to 80. Scotland shows only in accentuated form what is the expected trend of population throughout Britain, the peoples of which are likely to decline by about 20,000,000 in the present century. This is surely not news to Dr. Tamplin. The fact that something like 30 per cent. of insured workers in the Highlands are unemployed and 2,000,000 in Great Britain is merely evidence of the degree to which sectional interests obstruct the radical social reorganization which the age demands. But it is also true that immigration, *even under existing conditions*, is an asset and not a burden to the country as a whole. Fortunately for us, action on Christian principles coincides in this case with our own economic advantage! The proof of this truth is very clearly set out in Mrs. Roden Buxton's pamphlet. It is only when the subject is viewed from a standpoint of purely sectional or individual interest and privilege that any other opinion can be held.

Pelvic Deformity in India

Dr. I. N. CLOUGH (Glasgow) writes: In a textbook written and published in India, and used by some of the North Indian medical schools, the author observed that in North India the most common pelvic deformity was contraction of the pelvic outlet. One of the senior surgeons at the Cama Hospital, Bombay, told me the same thing. This corresponded with my own experience in South India, in a city hospital during a period of five years with an average of 200 maternity cases a year. I do not mean the osteomalacia type, which was fairly common, but the type in which the only deformity was lessening of the transverse diameter of the outlet. I should be glad to save any prospective worker in India from a fate that nearly overtook me in the early days. A healthy young Indian woman, a primipara, had the usual external pelvic measurements taken; they were found to be normal. I had occasion to leave the hospital for a few days, and should confidently have left the case to the sub-assistant surgeon and the nursing superintendent, both most reliable workers, but two hours before I was due to leave the patient went into labour. She was discovered to have a transverse diameter of the outlet of less than two inches. The mother and baby—a healthy full-sized boy—did excellently as a result of Caesarean section.

Optimum Health

Dr. L. I. HARDY (Hull) writes: In the *Sunday Times* of January 22 Lord Horder writes very aptly: "You cannot have an optimum health on a minimum diet. Apart from sheer scientific curiosity, I get no sort of satisfaction from calculating, with fine physiological exactness, upon just how little food a child can live and only just escape rickets or scurvy." It would be of greater interest and value to know the cost of feeding, clothing, providing for holidays (say a fortnight per annum), etc., for a child or an adult in an economical and simple way. This should be fairly easy, especially in the case of working-class families. A good all-round diet should contain liberal quantities—that is, quantities decided by normal appetites—of milk, tea, cocoa, water, bread, butter, eggs, fresh fish, fresh meat, potatoes, green vegetables, and fruit, allowing for varieties according to income. No other foodstuff is necessary except water, salt, and fat, etc., used in cooking, and various cereals to act as vehicles for milk. Sauce of any kind is "not good for you," and the money people spend on this dyspepsia-producing condiment would be better spent on English eggs or butter. Why does the Ministry of Health not broadcast lectures on the essential articles of food, methods of cooking them, number of meals per day, etc.? As a general practitioner I have come to the conclusion that people do not know what to eat, what to wear, or, in other words, how to live. Surely this is a most important piece of propaganda in the prevention of disease. The wireless, the cinema, and the daily press are useful agents for the dissemination of this knowledge. I hope the powers that be will accept this as a hint.

Treatment of Cracked or Sore Nipples

Dr. J. WALKER (Liverpool) writes: I notice in the *Journal* of January 28 (p. 198) a letter by Mr. R. Maxwell Savage on the subject of Wansbrough's metallic nipple shield, which I had suggested as a treatment for cracked and sore nipples (December 24, 1938, p. 1350). It is, of course, conceivable that the prolonged use of the shield might be a source of plumbism in the infant, but in my method of using it the danger is very remote, and I have neither heard of nor read of any case having been observed. I have not used these shields as preventives but therapeutically, their use being discontinued when the sore or crack is healed. I have also stressed the importance of cleansing both the nipple and the shield before use.

Eminent Victims of Hydrophobia

Dr. J. D. ROLLESTON writes: In reply to an inquiry on this subject in the issue of *Notes and Queries* for January 21, three correspondents mention the fourth Duke of Richmond (1764–1819), whose case is noted in Sir Thomas Watson's *Principles and Practice of Physic*, 1848, **1**, 601, and the fourth Viscount Doneraile, whose case is described by Pasteur in a letter to the *British Medical Journal*, 1887, **2**, 642. In both cases the disease was due to a tame fox.

"Jena Course, 1939"

In conjunction with the Institute of Scientific Microscopy and Applied Optics of the Jena University, Messrs. Carl Zeiss, Jena, are organizing from March 27 to April 1 a course of microscopy, microphotography, micro-cinematography, micromanipulation, luminescence microscopy, also absolute colorimetry, interferometry, and spectral analysis, with particular reference to their significance in medicine and biology. Among the lectures provided in the programme there will be talks by eminent authorities on optical methods. Members will be offered the opportunity of widening their experience in the use of the apparatus and of trying out in practice the methods referred to during the lectures. Further particulars and detailed programme may be obtained from Carl Zeiss (London) Ltd., Mortimer House, Mortimer Street, W.1.

Diet Sheets for Young Children

The National Association of Maternity and Child Welfare Centres and for the Prevention of Infant Mortality (Carnegie House, 117, Piccadilly, W.1) has now issued in pamphlet form a series of most useful *Diet Sheets for Children from Six Months to Five Years of Age*. These are thoroughly in accordance with modern teaching, but they are also designed to give latitude to the medical practitioner in charge of the individual child, both by indicating wide choice of foods and by providing a space on each diet sheet for notes. Doctors should find these modestly priced pamphlets (3d. each) most useful for passing on to the mothers of their young patients.

Corrigendum

An error occurred in the report of Dr. C. C. Ungley's contribution to the discussion on the clinical aspects of the vitamin B complex on page 129 of our issue for January 21. The sentence at the foot of column two referring to cerebrospinal fluid changes should have read: "Cases which showed gross motor changes without sensory changes and those which showed a raised cerebrospinal fluid *protein* were almost certainly not nutritional in origin."

Disclaimer

Dr. A. C. MAGIAN (London, W.) writes: On February 2 my house was entered by burglars, who took among other things my book of case records. In appealing for a return of this the Press printed all kinds of references to my work and qualifications, which were entirely unauthorized and to which I took the strongest exception. Photographs of the house and of myself were also printed without my knowledge and consent. No information about my work or appointments or decorations was given by me, and I can only assume that these details were obtained from the *Directory*.